# American Engineer

APRIL 1961

## The President's Peace Corps:

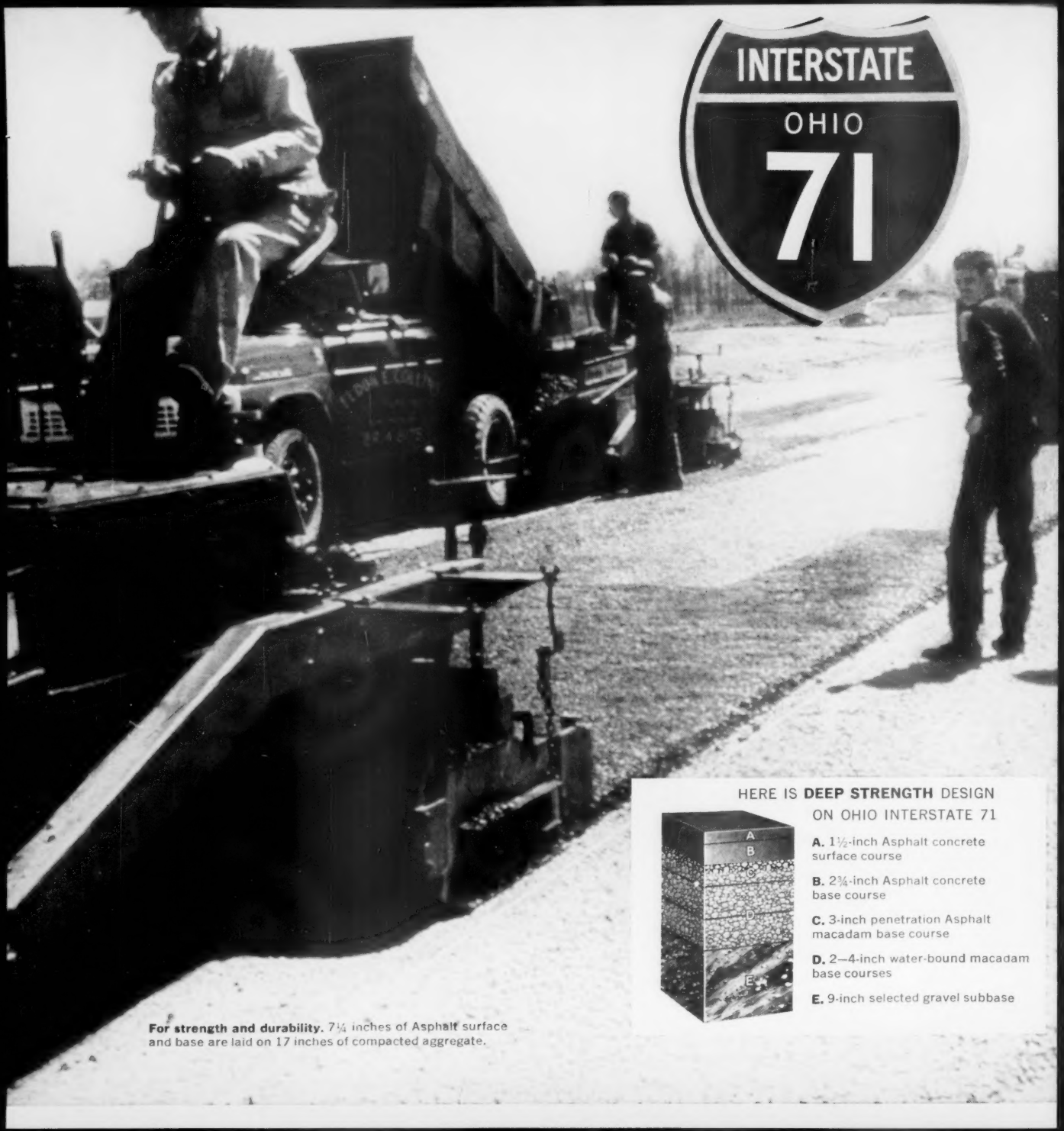
### A New Responsibility for Engineers

(See Page 21)

- MIT Centennial

Also:

- Professional Concepts for Students




**For strength and durability.** 7¼ inches of Asphalt surface and base are laid on 17 inches of compacted aggregate.

HERE IS **DEEP STRENGTH** DESIGN ON OHIO INTERSTATE 71



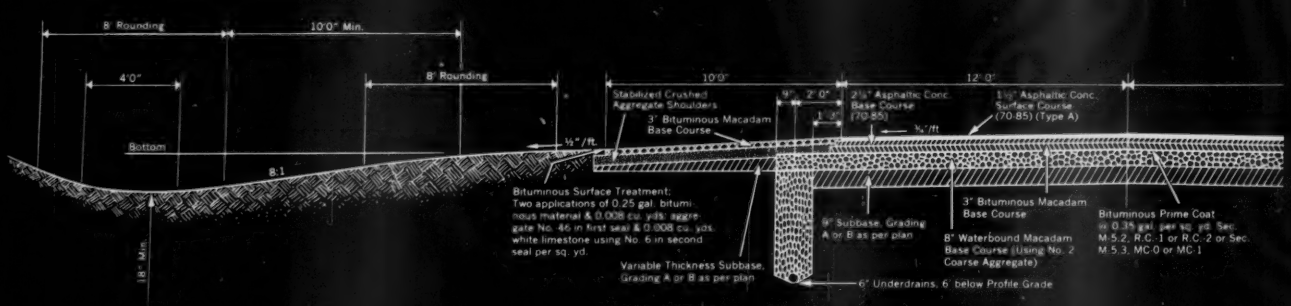

**A.** 1½-inch Asphalt concrete surface course

**B.** 2¾-inch Asphalt concrete base course

**C.** 3-inch penetration Asphalt macadam base course

**D.** 2—4-inch water-bound macadam base courses

**E.** 9-inch selected gravel subbase


8' Rounding
10'0" Min.
4'0"
8' Rounding
Bottom
½"/ft.
8:1
18" Min.
10'0"
12'0"
Stabilized Crushed Aggregate Shoulders
3" Bituminous Macadam Base Course
9"
2'0"
1'3"
2½" Asphaltic Conc. Base Course (70-85)
1½" Asphaltic Conc. Surface Course (70-85) (Type A)
¼"/ft.
Bituminous Surface Treatment: Two applications of 0.25 gal. bituminous material & 0.008 cu. yds. aggregate No. 46 in first seal & 0.008 cu. yds. white limestone using No. 6 in second seal per sq. yd.
Variable Thickness Subbase, Grading A or B as per plan
9" Subbase, Grading A or B as per plan
3" Bituminous Macadam Base Course
8" Waterbound Macadam Base Course (Using No. 2 Coarse Aggregate)
Bituminous Prime Coat @ 0.35 gal. per sq. yd. Sec. M-5.2, R.C.-1 or R.C.-2 or Sec. M-5.3, MC-0 or MC-1
6" Underdrains, 6' below Profile Grade

## New Section of Interstate 71:

# First DEEP STRENGTH Asphalt Paved Interstate Highway in Ohio!

Traffic is now rolling on the first DEEP STRENGTH Asphalt paved Interstate Highway in Ohio. Serving a highly industrialized area, this new 17-mile section of Interstate 71 will be subjected to heavy freight traffic.

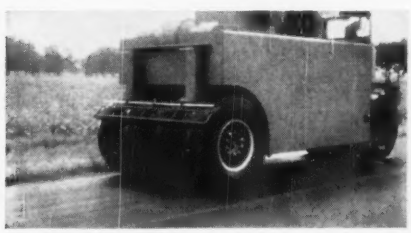
That's one reason why Ohio State highway engineers chose DEEP STRENGTH Asphalt pavement. Notice in the cross-section drawing (below) how design follows precepts of DEEP STRENGTH Asphalt construction . . . heavy-duty Asphalt concrete surface course . . . heavy-duty Asphalt base . . . Asphalt primed subbase . . . **depressed median and deep longitudinal drain on outside and inside shoulders for good drainage** . . . heavy proof-rolling of subbase . . . and use of high-contact pressure pneumatic proof-roller on all other courses. HERE IS STRENGTH AND DURABILITY!

**When built like this—for DEEP STRENGTH—Asphalt pavements will carry heaviest traffic loads without distress . . . and with minimum maintenance cost.**

And, most important, Asphalt pavements built to this Advanced Design Criteria can often save money over the cost of Asphalt pavement designed to other standards. That's because the Advanced Design Criteria permit inexpensive Asphalt base to be substituted, within limits, for more expensive Asphalt concrete surfacing, and allow reduction in total structure thickness when used in place of untreated base.

**NEW HANDBOOK!** A new edition of the *Asphalt Handbook* incorporating all the Advanced Design Criteria implied by the term DEEP STRENGTH Asphalt pavement is now available. Write to The Asphalt Institute.

New DEEP STRENGTH Asphalt section extends northeast paralleling existing U. S. Route No. 42.

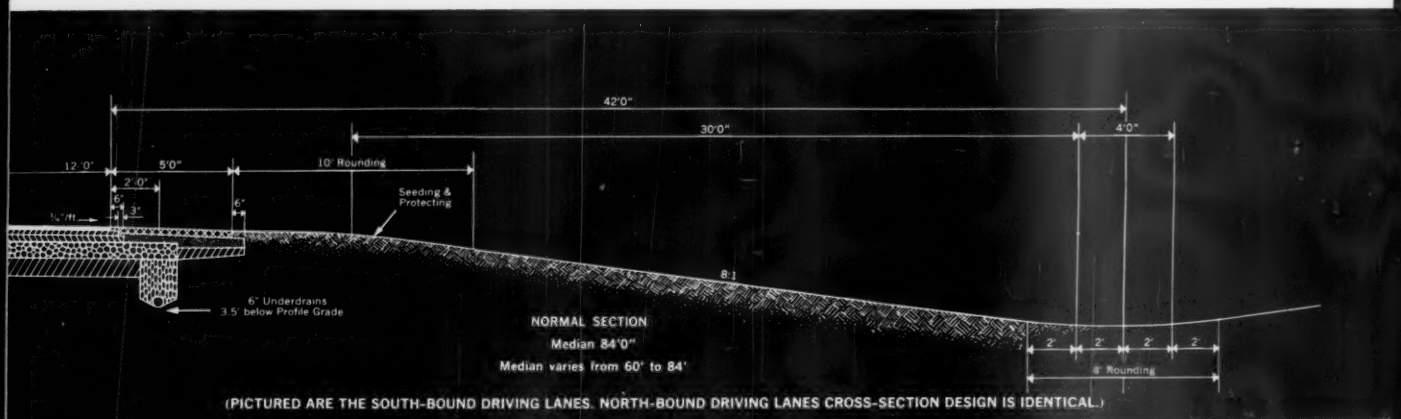


**For smoother riding,** the subbase was proof-rolled with a 50-ton compactor using tire pressures of 150 psi. A 30-ton rubber-tire compactor with tire pressures of 120 psi was used on all other courses.

**For good drainage,** section was designed with a depressed median and a system of deep longitudinal drains on each side of travel lanes to prevent water from entering the foundation courses.

## THE ASPHALT INSTITUTE

Asphalt Institute Building, College Park, Maryland




(PICTURED ARE THE SOUTH-BOUND DRIVING LANES. NORTH-BOUND DRIVING LANES CROSS-SECTION DESIGN IS IDENTICAL.)

# Letters to the Editor

### More Humanities . . .

Dear Editor:

The article "More Humanities or More Engineering?" in the January issue of AE calls to mind the occasions in more than fifty years of engineering pratice when the writer has discussed this same question. My opinion, for whatever it may be worth, is that there is never enough knowledge of either, but that if a young man of promise must skimp in his years of formal education, let it be in the engineering rather than the humanities.

After all, how far can the professors go in teaching other than the basic engineering as it has been applied up to the time the latest books were written? The working engineer must not only keep abreast of developments in his particular field, he must frequently forge ahead of anything previously done, certainly in advance of any text books. In short, he must carry on his engineering study as long as he works.

If a man is to achieve stature as an engineer, he will be a total misfit if his knowledge is limited to his specialty. He may not be equally conversant in archaeology, psychology, ethics, tropical fish, literature and opera, but he frequently may wish he could be. And if his early years are devoted exclusively to engineering he is very unlikely to develop a taste for other branches of knowledge.

The engineer who would hold his head high should have a broad base on which to build his life. The best engineering schools today cannot possibly hope to teach a student the problems of tomorrow, much less how to solve them. They can teach him fundamentals of his field, among which the most unimportant are knowledge of and respect for the different cultures and wisdoms of other peoples, living and dead.

Bayard F. Snow, P.E.
Miami, Florida

### On the Model Law . . .

Dear Editor:

I would like the opportunity of commenting briefly on President Hull's discussion of the Model Law in the February issue of AE, especially with respect to corporate obligations as covered in Section 22(d).

It would be interesting to see some documentation of Mr. Hull's statement "that section 22(d) represents a compromise between opposing camps. . . ."

To the best of my knowledge not one suggestion on this subject made by Consulting Engineers Council, American Institute of Consulting Engineers, or American Society of Civil Engineers was accepted by NCSBEE. All three of these groups presented their positions on 22(d) to NCSBEE at a hearing in New York on May 16, 1960. I have before me the draft of the Model Law dated March 15, 1960, which was reviewed at this meeting, and the text adopted by NCSBEE on August 18, 1960. The only difference, other than punctuation, is the addition of three words, "in the state," which have the effect of easing one potentially onerous corporate obligation. How this represents a "compromise" is not clear to me.

The opposition of CEC to this section as it now stands is based on two considerations: (1) It permits control of engineers by nonengineers whose interests and attitudes may be divergent from ours, and may not be in the interest of the public or the profession; (2) It permits the furnishing of engineers' services by corporations whose interest in the sale of a product or nonengineering service (such as building construction) may tend to influence the engineering work to the possible detriment of the client. We regard this as a conflict-of-interest situation which tends to diminish our status as a profession.

We believe that these two principles deserve the thoughtful consideration of all engineers who believe we are a profession.

Samuel Adams Bogen, P.E.
Chairman, Model Law Committee
Consulting Engineers Council
Springfield, Ill.

### Statistics and Acts . . .

Dear Editor:

I cannot resist the impulse of comparing the statistics given by Clayton H. Stimmel on page 28 of your January issue with the classified ad under position available on page 49.

These statistics show that engineering as a profession has about twice as many practising individuals as there are licensed individuals, while in medicine, dentistry and law there are more licensed persons than practising persons. This speaks for itself.

Now add to this, the fact that only about *one-fifth* of the licensed engineers, and only about 10 per cent of practising engineers are members in a professional society as compared to 86 and 76 per cent respectively for medicine, then we clearly see how good we are with regards to support of our common cause!

After having read several full pages of ads in the Sunday, February 5, *New York Times* financial section of firms who are looking for engineers, we turn our attention to the only employment ad in the American Engineer which concerns an opportunity for "draftsmen or engineers." Note the wording.

It seems to me that here at least is one field where your worthy magazine might do better. Many engineering careers start out with employment of some kind—and why not start with this beginning? Could it be that American Engineer is not being read by anyone who grants or wants employment? I understand that the income derived from the engineering ads in *New York Times* is quite substantial. It might be well worth while to call this to the attention of the internal revenue service, as well as defense contract agencies, since it would seem

*(Continued on page 54)*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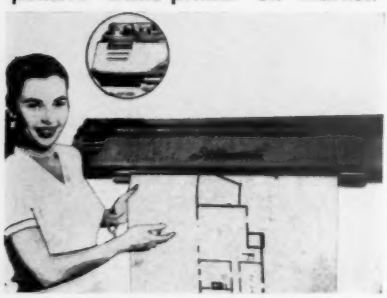

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*(Circle 2 in Readers' Service Dept.)*

# American Engineer

APRIL 1961
Vol. 31, No. 4

NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS FOUNDED 1934

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American Engineer
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Washington 6, D. C.
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The American Engineer is published monthly by the National Society of Professional Engineers, 2029 K St., N. W., Washington 6, D. C., and printed by the National Publishing Company, Washington, D. C. Second Class Postage Paid at Washington, D. C.


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Subscription Rates: $3 per year in advance to members of NSPE and its affiliated Societies; $4 per year in advance to non-members in U. S. A. and its possessions, Canada and Mexico. Foreign, $5 per year. Single copy, 50¢.



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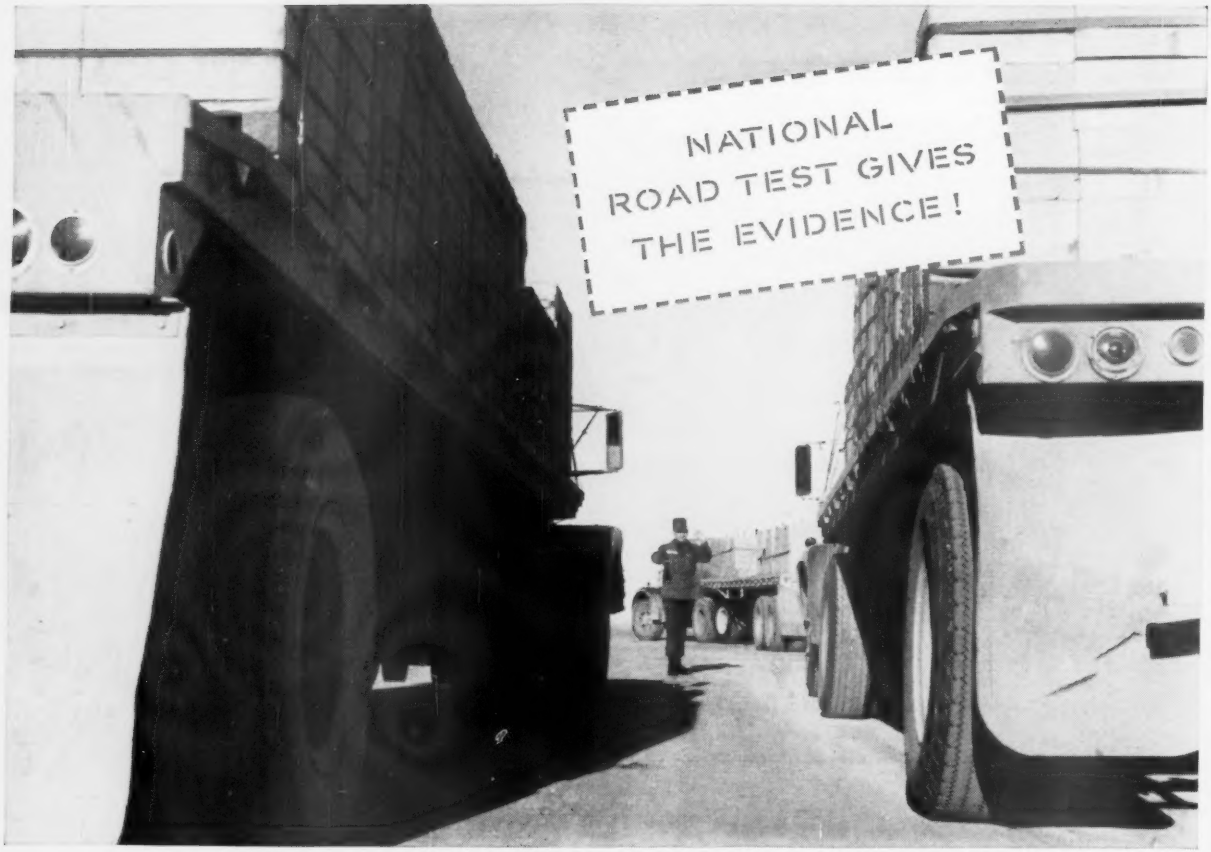


# Concrete wins over asphalt these basic ways...

**Sponsored by The American Association of State Highway Officials (AASHO)** . . . directed by the Highway Research Board of the National Academy of Sciences—National Research Council. Here is the most scientific pavement test ever made. Accurate instrumentation checked performance of test sections during 2 full years of traffic. 99 trucks, 19 hours daily, 6 days a week. There were 17 million miles of travel—1,113,762 load applications!

## 1

### DURABILITY

A count of pavement sections surviving in the great National Road Test, after two full years of traffic, showed concrete outlasted asphalt 3 to 1! Here is new confirmation that concrete gives more for tax dollars.

## 2

### DRIVING COMFORT

In ratings of how test pavements retained the riding quality they started with, concrete won over asphalt by a wide margin. Only concrete can give lasting driving comfort without excessive maintenance.

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*A national organization to improve and extend the uses of concrete*

*(Circle 3 in Readers' Service Dept.)*

# "This Month"

As we go to press the Laotian crisis worsens and we cannot help but wonder what more, if anything, could have been done along the line to have nipped Red appeal (and advance) in that tiny kingdom, which might have been the thinking of those who first promoted the idealistic Peace Corps. In any case we have the Corps, engineers will be an integral part of it, and so AE takes a hard look at it beginning on page 21.

MIT, that grandparent of all tech schools, is a big One Hundred years old this year, but a sprier octogenarian-plus you have never seen! Turn to page 30 and help us pay homage to this great lady and also chat briefly with a few of her offspring.

There is a course of study at Purdue called "The Engineering Profession" and beginning on page 34 we review what's in it and how it is taught. Check this and learn how these youngsters get set for their careers that stretch out ahead.

A number of first-rate miscellaneous pieces "This Month" that should not be missed: The Engineer and the Law, page 29; A new Board of Ethical Review case, page 33; An AE Special Report on public relations among Missouri engineers, page 37; Part II of our series on the work of NSPE Veeps, page 38; and our annual Engineers' Week roundup, page 42.

Here is "This Month's" news:

General. Page 8. Among the headlines: Pennsylvania Requires PE's to Plan All Major Dams . . . Flight 'Engineers' Aren't Engineers, Says Robbins . . . Daytona Firm Cleared of 1958 Negligence Charge . . . MAP Holds Congress of Professions in Detroit.

Industry. Page 11. The lead story here reports on how industry feels about its recruiting methods and its search for improvement. In another story the NLRB rules time study men at Swift & Co. not professionals. And in further news a Seattle engineering union sounds the death rattle for ESA by commenting that it (ESA) was "born 50 years too soon" or words to that effect.

Consulting. Page 13. The stories: Self-employed retirement legislation is back in the news . . . NSPE questions Small Business Administration proposal to allow investment companies to establish consulting corporations . . . the ICBM construction program draws Capitol Hill fire . . . Tighter Canadian Tariffs may concern U.S. engineering . . . Rep. Frelinghuysen will consider NSPE's "no consultant" protest in college construction bill.

Education. Page 15. Top of the news here is that the NSF will allow students to do research with experts either on an individual basis or as a member of a research team.

Government. Page 17. Two stories: (1.) Revision May Improve Pay of Engineers in Civil Service, and, (2.) National Science Medal Becomes a Reality.

Registration. Page 18. The latest on a legal ruling stating that both the Michigan and Ohio registration statutes are unconstitutional. An interpretive report by our legal staff.

Kenneth E. Trombley

Editor

# Pennsylvania Requires PE's to Plan All Major Dams

The Water and Power Resources Board of Pennsylvania announced recently that in the future it will require professional engineers to prepare plans for any dam with a spillway elevation of more than ten feet above a stream or any project that may imperil life or cause substantial damage should it fail.

The announcement came from Maurice K. Goddard, forests and waters secretary, who said that the measure has been adopted because applicants for dam or encroachment permits have submitted "totally inadequate engineering details" causing a "considerable burden to the Board's engineering staff." He said that "by requiring professional preparation of plans for other than minor dams or encroachments on a stream in Pennsylvania, we are simply taking another step toward assuring public safety and protecting the public interest."

The passage in 1913 of Pennsylvania's first law requiring permits to build any major dam resulted after two dam failures took nearly 2300 lives and almost obliterated a town of 2000 population. Pennsylvania's law was one of the first of such laws which are now common in many states. The effectiveness of the State's Water and Power Resources Board is illustrated by the fact that since 1913, no dam which was built according to the specifications set up by the Board has failed.

## Flight 'Engineers' Aren't Engineers, Says Robbins

During the recent strike among technical employees of several leading airlines, NSPE Executive Director Paul H. Robbins suggested that confusion could be avoided if the word "engineers" were eliminated from the title of the Flight Engineers International Association (FEIA).

In a letter to the FEIA Robbins suggested that their interests "would be better served if the name of the organization were changed in such a way as to make it readily understandable in terms of the actual type of responsibility involved."

He suggested that a name such as "Flight Technicians International Association" would be in keeping with the description of the duties of the members of the group. His letter continued to point out that the distinction between "flight engineers" and "professional engineers" was that the latter were graduates of an accredited engineering curriculum and registered under the laws of the various states for the practice of engineering.

Robbins added that he hoped the "flight engineers" would accept "this distinction as between those who perform a professional engineering function and those who perform a function as highly skilled mechanics or technicians."

## Daytona Firm Cleared of 1958 Negligence Charge

A jury of the U.S. District Court for the Southern District of Florida recently returned a verdict which vindicated the firm of Gannett Fleming Corddry & Carpenter of charges brought against them by the City of Daytona Beach over the design and supervision of construction of a municipal paving program in 1949-50.

The suit was for damages allegedly arising as a consequence of "willful or reckless or negligent" performance of the contract (see AE, Feb. 1959, p. 11). In its action the city maintained that the engineers had recommended the use of a type of cement that cost two and a half times petroleum cement although not in any way superior in quality; that they had permitted the use of defective concrete pipe and that the plans for the laying of asphalt courses over old brick paved streets had been negligently drawn in that the engineers failed to recognize that such a surface would not be permanent on a base of this sort.

During earlier proceedings the case had been once dismissed and then reversed. The current decision allows that the construction was strictly in accordance with accepted engineering standards and practice.

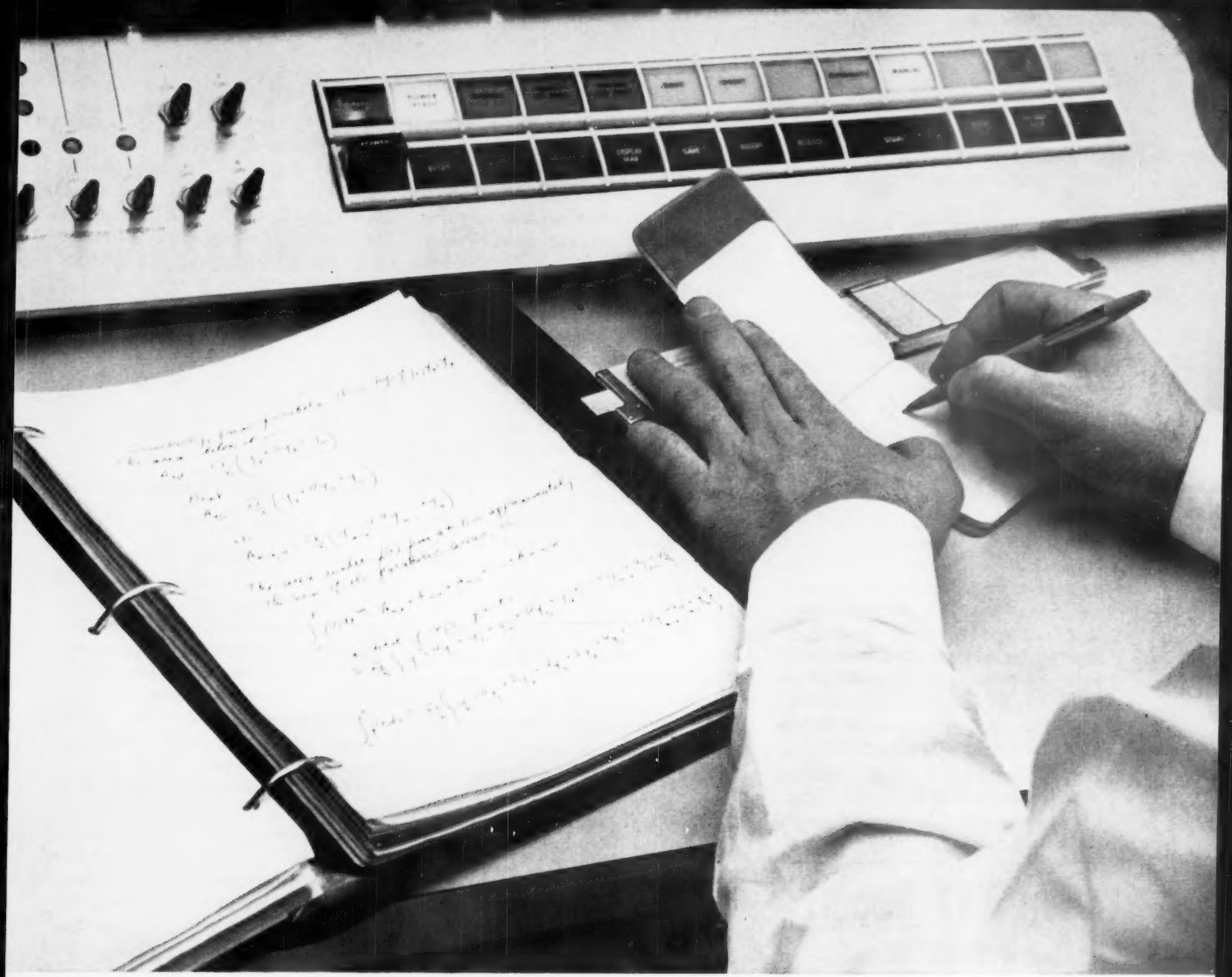
## Editor to Represent AE at Writers' Institute

The technical writer and his relation to the expanding uses of communication in modern industry and government will be the theme of the Ninth Annual Technical Writer's Institute scheduled for June 12-16, at Rensselaer Polytechnic Institute, Troy, New York. Experienced professional writers will join Rensselaer's technical writing staff in presenting the week-long institute, which is under the direction of RPI Professor Jay R. Gould.

Among the visiting staff for the program are AMERICAN ENGINEER Editor Kenneth E. Trombley, Dr. Vernon M. Root, president, Society of Technical Writers and Publishers; Herbert B. Michaelson, research editor, *IBM Journal of Research and Development;* and Robert L. Stedfeld, associate managing editor, *Machine Design.*

Some of the topics to be covered are: Estimating reader attitudes to apply to reports and technical description; the process of communication; analysis of the principles of editing; developing manuals and instructions; the editor's

*(Continued on page 10)*



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*(Continued from page 8)*

obligations to engineers and scientists; technical advertising; and article writing.

RPI's Institute was founded in 1953 to provide a forum and workshop for technical writers and editors. During the past eight years representatives of government, industry and technical publishing firms have taken advantage of the seminar.

## MAP Holds Congress of Professions in Detroit

The Michigan Association of the Professions (MAP) recently held the second annual Congress of the Professions in Detroit, to examine its own organization, past, present and future.

Now two years old, MAP consists of more than 3000 men and women in the professions of architecture, dentistry, engineering, medicine, law, veterinary medicine and pharmacy. The three-day conference included speakers of national importance, committee hearings, discussion groups and interprofessional forums on the achievements, evaluation and challenges which face the professional man. Attendance at the meeting included many interested nonmembers.

Those present considered the meeting even more successful than its 1960 predecessor, citing as particularly interesting one program in which each of the seven professions was called upon to defend or justify itself to the other six.

Among the speakers at the Congress were Charles R. Sligh, Jr., executive vice president of the National Association of Manufacturers; R. S. Young, educational consultant to General Motors Corp.; Harold S. Black, director of communications development at Bell Telephone Co.; and Honorable John R. Dethmers, chief justice, Supreme Court of Michigan.

The Michigan group is the first association of its kind directing its total effort to the interests and problems common to *all* professions. MAP presents a united front for its members in four broad fields —public relations, legislation, education and business techniques and services. It is endorsed by the state societies representing the member professions and its Board of Directors is made up of officials and key persons from these Societies. In order to be eligible for membership in MAP, the professional person must first be a member in good standing of his state society.

## NYU Meet Will Study Communication of Ideas

A national conference concerned with the communication of ideas between scientists and humanists will be held Monday, April 17, at New York University. Conference participants also will explore means by which new and complex ideas can be communicated to the general community.

The conference, which has the theme "Toward a Community of Learning," is to be conducted by NYU's Division of General Education and Extension Services. Among the speakers will be Dr. Alan T. Waterman, director of the National Science Foundation; Dr. Clarence Faust, vice president of the Ford Foundation; Dr. Perry Miller, professor of American literature at Harvard University; and Dr. Peter Drucker, professor of management at NYU.

Dean Paul A. McGhee of the Division of General Education said that the conference arose from "a sense of the urgent need for the scientist and the humanist to communicate with each other and for both to communicate with responsible, adult citizens." He added that "a concern for the continuing education of the whole man implies a concern with the sciences, with the humanities, and with the communication of ideas."

## Engineering, Photography Will Make Colorful Study

A comprehensive review of progress in all technical aspects of color photography will provide the main program of the 1961 national conference of the Society of Photographic Scientists & Engineers at the Arlington Hotel in Binghamton, N.Y., May 22-26, George T. Eaton, SPSE president, announced recently.

Timely papers on scientific and engineering phases of black-and-white photography will also be scheduled during the five-day national meeting. Specific areas of color planned for the program include: Color photographic systems and processes; the structure of the color image; color sensitometry and densitometry, the measurement of photo materials before and after development; color cameras, printers and processing equipment; color photography for recording purposes in science and engineering; and color perception, and related psychology.

## AIEE Nominates Chase to Head Society in '61-'62

The American Institute of Electrical Engineers has nominated Warren H. Chase of Cleveland, vice president of the Ohio Bell Telephone Company, as its 1961-62 president.

The nomination of Chase as president and of ten vice presidents was made at the group's recent winter meeting in New York. Balloting will be by mail. Chase is a Harvard University engineering graduate, and has been with Ohio Bell Telephone for 25 years.


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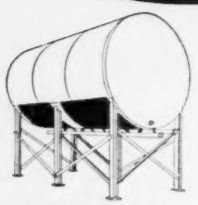

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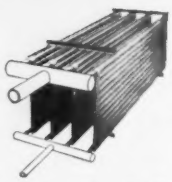

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# Firms Dub Recruiting Methods Misleading and Too Expensive

Industrial firms are practically unanimous in condemning present campus recruiting techniques for being too costly and for giving students an inflated picture of their own value, but they are also afraid to do anything about it.

A recent *Wall Street Journal* survey brings out industry worries and uncovers instances of questionable practices in the quest for talented graduates.

Principal complaint of industrial recruiters is that they must either compete tooth and nail in expensive, snowballing, recruiting programs, or else stand by and watch their less conservative competitors grab off the top graduates. In addition, corporate bowing and scraping makes students big headed and easily disillusioned when confronted with industrial facts of life, report companies. To stop all this, many recruiting officials would like to scale down some of their operations, provided, naturally, that their competitors do likewise.

From another quarter come other complaints: To get what they want, companies indulge in highly questionable practices, say college placement directors. Not only do recruiters try to circumvent authorized student-contact channels, but they use corporate contributions to schools as a weapon to get preferred interview scheduling and advance lists of students' names and qualifications.

On the other hand company recruiters accuse college placement directors of playing "little tin god" and of forcing unreasonable restrictions upon their movements and tactics. Placement officers should be more interested in seeing their students get good jobs and less interested in inflating their own positions, say the recruiters.

To bring the system back to earth again the General Council of the American Society of Engineering Education recently approved a set of "Principles and Practices of College Recruiting," which clarify the responsibilities of the recruiter, the college and the student. These rules, it is hoped, will provide the student with the objective atmosphere he needs to make a valid career choice by encouraging the full disclosure of all pertinent facts surrounding offers of employment, while at the same time assuring equal treatment for all prospective employers.

To beat the high fees of recruiting firms, some defense contractors are reportedly expanding bonus programs for employees who bring in hard-to-hire engineers. One firm, following this policy, pays $250 for an engineer hired at less than $11,000, and more for a higher paid specialist.

## Time Study Men Aren't Professional Employees

In a ruling on professional and technical status at Swift & Company in National City, Illinois, the NLRB has decided that Swift's time study engineers are not professionals, and that their laboratory technicians are not technical employees.

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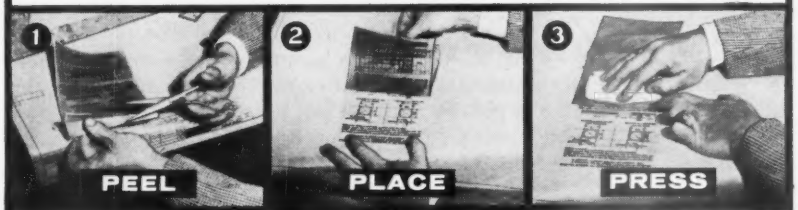


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*(Circle 5 in Readers' Service Dept.)*

America, AFL-CIO had petitioned the NLRB to be placed on the ballot in an election in a unit of plant clerical employees. The company had sought to have the time study engineers and laboratory technicians excluded from this unit as professional or technical employees.

In accordance with established policy, the Board looked behind the job titles and found that the time study engineers are required to have only two to three years of college or four to five years of on-the-job experience. The Board ruled them to be technical rather than professional employees, but nevertheless excluded them from the voting unit of plant clericals. The laboratory technicians, however, are not required to have any advanced education, and perform only routine tasks which do not necessitate the use of independent judgment. As a result they were held not to be technical employees and were included in the voting unit.

## Yearly Turnover Costs Industry $300 Million

Turnover among engineering and scientific staffs costs U.S. industry over $300 million yearly, says Dr. Frederick J. Gaudet of Stevens Institute of Technology.

As reported to the press, Dr. Gaudet, director of Stevens' Laboratory of Psychological Studies at Hoboken, N.Y., says this figure includes recruiting and training, but apparently does not cover the more elusive costs attributable to project slow down and loss of contracts.

## Seattle Union Says ESA Was Born 50 Years Early

A Seattle engineering union has said that Engineers and Scientists of America, the now-defunct national federation of engineering unions, failed to survive because it was "born 50 years too soon."

In a release to members, the Seattle Professional Engineering Employees Association carried news of ESA's passing and expressed the opinion that the engineering profession "has not yet developed the collective maturity to be ready for unity on a national scale."

SPEEA, a Boeing Airplane Company union, feels that the root of ESA's troubles was the lack of mutual interest on the part of unions representing engineers employed by different companies. While member unions found themselves in agreement on general objectives, when it came to specific needs and programs, "We found complete disagreement," says SPEEA.

In spite of ESA's evident inability to satisfy the needs and desires of employed engineers, SPEEA still feels the need for a national engineering union, concluding hopefully that "Out of the ashes of our experiences with ESA may yet rise the professional unity which we seek."

## Design Meet to Consider Automotive Engineering

Reports from automobile company executives on how they measure and meet public tastes in cars will be a feature of the Design Engineering Conference at Cobo Hall, Detroit, May 22 through 25.

The panel session, which will take place on the first day, will have as participants some of the top engineers and sales executives of Ford, General Motors, Chrysler and American Motors. They will describe how their companies determine what the public wants, how the engineering departments design components of automobiles at minimum cost, and how the production departments produce these parts.

The show is one of the largest industrial expositions in the country. More than 400 companies will exhibit materials and components for virtually every type of product manufactured in the country. Devoted to the research and development of new products, the show will occupy five acres of exhibit area.

On the succeeding three days of the conference, specific design problems will be considered. Presented at each of the sessions will be two related papers which will cover such topics as designing to allow greater production, cost reduction through standardization, design of glass, plastic and ceramic components, high strength steels, and synchronous motors.

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## AMA Reports Executives Well Paid at All Levels

Compensation for executives at all levels has been increasing at almost the same rate for the past five years with the biggest gains at the lower levels, it was reported recently by the American Management Association.

The Association's Executive Compensation Service, which this year completed ten years continuous study of top management compensation, will inaugurate early in 1961 a seventh series of reports covering administration and control of the compensation program.

To maintain the approximately five per cent average annual rise in top executive compensation, reports Dean H. Rosensteel, director of the ECS, companies must increase their sales and profits since the most important determining factors in increased compensation at this level are size of the operation and type of business.

Factors that influence compensation at other levels of management, according to the Executive Compensation Service, are the following:

- Middle-management: company size or responsibilities of the job, or sometimes both;
- Sales personnel: the relative importance of the selling job and the experience and skill of the salesman; greatly influenced by economic trends since more than 75 per cent are on commission or bonus arrangements;
- Professional and scientific personnel: primarily qualifications, duties, and responsibilities; and
- First-line supervisors: the scope and complexity of the activities supervised, directly related to changes in pay rates of subordinates.

# Ways, Means Committee Apt To Favor A Retirement Bill

Two members of the House Ways and Means Committee have introduced self-employed retirement bills, giving evidence that this key committee will once again put its seal of approval on legislative efforts to gain tax equality for the self-employed. The two committee members are Republican Representatives James B. Utt of California and Steven B. Derounian of New York.

In introducing his bill, Representative Derounian pointed out that self-employed legislation would reduce the degree of dependency among older age groups: "I believe that legislation of this type is in the public interest in that it provides an incentive for millions of Americans to set aside part of their earnings for retirement years, thus reducing the need for reliance on government for assistance."

In addition to the bills entered by these two committee members, no less than eighteen other self-employed retirement bills have thus far gone into the hopper and thence to the Ways and Means Committee. They are all similar or identical to the Keogh bill, H.R. 10, which permits the self-employed to set aside on a deductible basis up to ten per cent of their yearly income or $2500, whichever is less, provided similar provisions are set up for employees on a nondiscriminatory basis.

One of the most recent additions to the growing list of bill sponsors is Republican Representative Bradford F. Morse of Massachusetts. In supporting the statements of Representative Derounian, Morse said, "Individual enterprise is one of this Nation's most precious commodities. Freedom to earn one's wages at the occupation of one's choice, freedom to spend those wages as the individual sees fit, freedom to set aside a part of his earnings against retirement years —these are liberties we all cherish. . . . The Nation owes [self-employed retirement legislation] to the initiative and prudence of millions of self-employed Americans."

## Robbins Questions SBA's Proposed Rule Change

A proposed rule change by the Small Business Administration, which would allow small business investment companies to establish consulting and advisory corporations, has been questioned by NSPE Executive Director Paul H. Robbins.

The proposed amendment would authorize a small business investment firm, licensed and financed by the Small Business Administration under the Small Business Investment Act of 1958, to form and own all the stock of a corporation for the purpose of providing consulting and advisory services to small businesses.

In a request for amendment to the Small Business Investment Division of the SBA, Robbins pointed out that the present wording of the new regulation could cause confusion and could be interpreted to permit individuals or corporations to offer consulting engineering services in violation of state laws.

"Although the proposed amendment undoubtedly is not intended to authorize such practice," said Robbins, "we believe it would be desirable to clarify the language in order to prevent such misunderstanding." To prevent any misinterpretation of the new rule, Robbins urged that the wording be changed to limit the performance of engineering services to those qualified and authorized to do so under applicable state laws.

## AF Missile Construction Program Comes Under Fire

In a report on the Air Force ICBM construction program, the House Military Construction Subcommittee has charged that excessive change orders, to some degree caused by the "ivory tower estimating" of engineers and architects, is partially responsible for the soaring costs of missile base construction.

After extensive hearings in which committee members heard the testimony of Defense Department officials, Air Force and Army representatives, and construction principals, the Committee charged that duplication of effort, unwieldy administration and deadend communications channels have resulted in unrealistic construction estimates and excessive change orders.

In a meeting held at the request of Subcommittee Chairman Harry R. Sheppard of California, representatives of the Functional Section for Consulting Engineers in Private Practice were informed of the program's difficulties and offered to provide whatever assistance they could in the Committee's efforts to streamline administration of construction activities. Sheppard

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## AE Meetings of Note

**American Society of Civil Engineers**—Phoenix Convention, April 10-14, Hotel Westward Ho, Phoenix, Arizona.

**Society of Technical Writers and Publishers** — Annual Convention, April 13-14, Mark Hopkins Hotel, San Francisco, California.

**American Welding Society**—Annual Meeting and Welding Exposition, April 18-19, Hotel Commodore, New York, New York.

**Society of the Plastics Industries**—Annual Conference, April 20-21, Hotel del Coronado, Coronado, California.

**National Academy of Sciences**—Annual Meeting, April 24-26, Washington, D. C.

**American Institute of Mining and Metallurgical Engineers**—Southwest Mineral Industry Conference, April 24-25, Las Vegas, Nevada.

**Council of Engineering Society Secretaries**—May 1-3, Hotel Roosevelt, New York, New York.

**Society of American Military Engineers**—Annual Meeting, May 15-16, Mayflower Hotel, Washington, D.C.

**Design Engineering Show**—May 22-25, Cobo Hall, Detroit, Michigan.

requested the meeting after receiving the survey report.

The Committee report blames poor estimating on two factors: (1) Lack of direct communication between those in charge of missile design and those engaged in design of launching sites, and (2) absence of a centralized authority with sufficient power to properly handle construction contracts and related problems. Changes in the program recommended by the Committee are primarily aimed at correcting these deficiencies.

### Tighter Canadian Tariffs May Concern Engineering

After hearing the arguments of Canadian engineering societies, consulting engineers, manufacturers and representatives of the construction industry, the Canadian Tariff Board is studying a proposal to tighten restrictions on the free entry of engineering plans, drawings and blueprints.

The present regulation imposes a tariff on "Blueprints, building plans, maps and charts . . . ," but exempts these items when they relate to machines and other plant equipment and "structural supports and towers and similar outside structures, dams, spillways and other hydro construction, wiring, piping, platforms, ladders, stairs, etc., not to include office or other buildings."

The proposal of the Canadian engineering societies, however, would eliminate the exemption on towers, dams and other hydro construction, and would further define those items to be taxed. The proposal would apply the tariff to: "Designs, plans, drawings and models for all items of construction or works or planning, or additions or alterations thereto, and maps, charts, reports and specifications pertaining to the foregoing, and any reproduction of the above."

### Frelinghuysen Heeds NSPE's Suggestions

The Congressional sponsor of a college construction bill containing a no-consultant provision has said in answer to the NSPE protest (AE, March, p. 9) that careful consideration will be given to eliminating the objectionable section.

Known as the "College Facilities Act of 1961," the bill was introduced by Representative Frelinghuysen of New Jersey to help colleges finance building construction. While praising the intent of the bill, NSPE Executive Director Paul H. Robbins took exception to a provision which attempted to eliminate "extravagant" construction by restricting design to the staff of the Housing and Home Finance Administration.

In a letter to the Representative, Robbins pointed out that the professional ethics of private engineers and architects prohibit "extravagant" design, and that experience has shown colleges capable of retaining consultants to design the type of structures most suitable to needs and resources.

In his answer to Robbins, Frelinghuysen said, "I have noted with interest your comments on my bill. . . . In particular, I note your views with respect to the Housing and Home Finance Agency. You may be sure that when my bill or any others which may be similar to it come up for consideration in [the Education and Labor] Committee that I shall bear your comments in mind since I believe you have made some good points, especially with reference to the elimination of Section 5 (b)."


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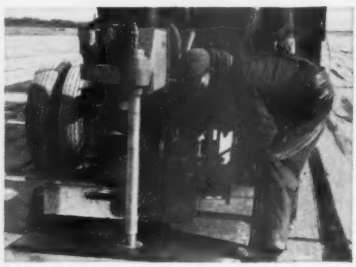

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# NSF Grants Allow Students To Do Research With Experts

Engineering undergraduates throughout the country will be able to learn the methods of research by working alongside experts in their fields beginning next summer as a result of National Science Foundation grants.

Students in more than 250 colleges and universities will have the opportunity to engage in scientific research either as an individual working under the direct supervision of an established scientist, or directly with an expert as a member of a research team.

The Foundation made available $3.2 million in 357 grants through its Undergraduate Research Participation Program to help build the interest of superior students in research, to widen their understanding of scientific method, and to improve their ability to employ scientific investigative procedures. The program is now in its third year.

Together with 165 awards made last year, the newly announced grants will allow for about 37 per cent of the participants to work in chemistry, 26 per cent in biological sciences, 13 per cent in engineering, and 12 per cent in physics, with the remainder in astronomy, geology, mathematics, psychology and the quantitative social sciences. Some of the grants can be extended over two years.

Director of the Foundation, Dr. Alan T. Waterman, said in announcing the grants, "The Undergraduate Research Participation Program is one way to aid and encourage colleges and universities to provide research or comparable experience to a comparatively small number of highly selected students with a view to accelerating and deepening those students' educations in the sciences."

Students receive nominal stipends while engaged in the programs and are chosen on the basis of applications made to the institution which they attend.

## Wanted: A Newton, Euclid or Einstein of Engineering

The American engineer, traditionally the shirt-sleeve doer, is being forced by an increasingly complex technology to turn also into a planner, analyst and syntheist. With mountains of new facts rising almost monthly, there is an urgent need for a Euclid, a Newton, or an Einstein in engineering, who can draw broad formulations and generalizations from seemingly unrelated data.

Such a consolidation of our new knowledge on man-made systems into broad laws "is the great challenge confronting practicing and teaching engineers," Dean L. M. K. Boelter of the UCLA College of Engineering told an Engineers' Week luncheon at the Chamber of Commerce Building last month.

"I understand he's majoring in design engineeering."

A second great challenge lies in closing the time gap between new laboratory findings and their industrial applications. One way to close the gap, Dean Boelter said, lies in better and faster exchange of information between universities and industry.

Another vital area of industry-university cooperation exists in the joint training and education of student and professional engineers. "The education of the engineer, whether undergraduate or post-graduate, is not complete unless it is paralleled by industrial training, as for instance through a balanced work-and-study program," Dean Boelter said.

He urged that industry take the lead in setting up such programs with appropriate universities, and emphasized that universities, in turn, have a responsibility for deepening and updating the working engineer's knowledge throughout his professional life.

Dean Boelter warned that society's increasing need for engineers was placing a heavy burden on engineering schools. Universities must compete with industry for the best engineering brains, and most engineering faculties are short-handed. There is a special need, Dean Boelter said, for more teachers who can synthesize current engineering knowledge and who have had practical experience.

## Research Board Publishes Highway Contract Report

A comprehensive legal analysis of state highway contracting procedures has been published by the Highway Research Board as *Special Report 57—Highway Contracts.* The report is based on a survey of all state statutes dealing with public contracts for highway construction, and covers such topics as contracting authority, anti-fraud provisions, competitive bidding requirements, bonding procedures and statutory regulation of labor and wages. A special appendix contains a summary of all state laws,

highlighting the main features which are common to most of them. Included also is a table of court decisions interpreting the law.

Although the report is geared primarily to the interests of construction contractors and government agencies, engineers involved in highway and other public works projects will find in its pages a wealth of practical information.

## First Measurement Science Center Opened at GW

This Nation's first measurement science center opened recently at George Washington University in Washington, D. C. About one third of the enrollees are graduate students from government and industry seeking advanced training and experience. The remainder are enrolled as undergraduates in engineering.

This unique program was organized by the university's school of engineering in cooperation with the National Bureau of Standards and with the assistance of the Martin Company of Baltimore.

The center will offer eight courses in metrology, the study, development and application of highly precise measurement, which has not been available until now as a comprehensive university program in this country.

In a situation known as the 'measurement pinch,' American industry and technology have found that the need for precision measurement has far outdistanced the instrumentation and technical skills now available. Extremes and ranges of temperature; electrical, electronic and microwave measurement; factors of mathematics, mechanics and statistics often go beyond the ability of the measuring techniques and equipment in existence today.

GW and the National Bureau of Standards, the agency officially responsible for metrology, have offered to meet this need through a curriculum in measurement science. Students enrolled in these university courses can work toward engineering certificates or the degrees of bachelor, master and doctor of science.


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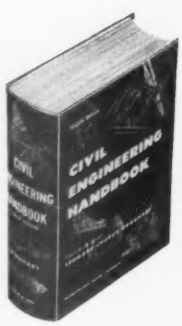


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# Revision May Improve Pay of Engineers in Civil Service

Situations in Government in which one engineer or scientist may get more than double the salary of another man working next to him who performs the same job, have been cited by Senator Mike Monroney as a prime reason for overhauling the Federal salary system. The Oklahoma Senator, second ranking Democrat on the Senate Civil Service Committee, said he was amazed to find engineers and scientists on Government projects making $40,000 a year, while those under Civil Service doing the same tasks are making less than half that amount. This has come about, the Senator said, because the Government's inability to pay competitive salaries under the Civil Service System to key engineers and scientists has forced it to award contracts to nonprofit organizations to secure these important services. The nonprofit groups hire the engineers and scientists to work for them on Government contracts at salaries up to $40,000 a year with the funds paid for by the Government.

"As a result," Monroney said, "we have a $15,000 civil service scientist working along side of a $40,000 scientist in either a nonprofit or profit organization on the same project. Both are paid by Federal funds, one directly and the other indirectly." This situation is not only unfair to civil service employees, but threatens to demoralize the entire Federal service, he declared.

Senator Monroney asked that the Administration and the Civil Service Commission make recommendations for setting up a high level pay commission study to see what can be done about readjusting the entire Government pay structure to make it more realistic in meeting the needs of the times. Monroney said that the United States cannot afford to be second best in the missile and space races, implying that the salary structure may be hampering the Government's efforts in these fields.

The Senator noted that efforts to raise Federal salaries to a more competitive level have been stymied by the fact that the Congressional pay ceiling is $22,500 a year and there has been reluctance on the part of the Executive branch to propose Federal salaries higher than those received by members of Congress. However, he said the Congressional pay scale should not be allowed to interfere in setting Federal pay scales which are realistic in terms of comparable industry pay.

The Senator's comments were made during a hearing on the nomination of John W. Macy for chairman of the Civil Service Commission.

## National Science Medal Becomes A Reality

In one of his last official acts before leaving office, President Eisenhower issued an executive order prescribing the design of the new National Medal of Science which is to be awarded to individuals who make outstanding contributions in the physical, biological, mathematical and engineering sciences.

The medal is struck in bronze, three and one-quarter inches overall, and will be suitably inscribed. Each individual awarded the medal will also receive a parchment citation descriptive of the award.

Legislation authorizing the presentation of the medal to not more than 20 individuals in any one year was passed by Congress in 1959. The awards are to be made by the President on the basis of recommendations received from the National Academy of Sciences, although recommendations may also be made by any Government agency and by any scientific or engineering society through the National Academy.

As originally sent to the House floor by the Committee on Science and Astronautics, the bill provided that each recipient of the medal would also receive a lump sum payment of up to $10,000. The monetary part of the award was stricken from the bill, however, during House debates. Rep. Victor Anfuso of New York originator of the Medal of Science idea, has introduced legislation in the current

session to reinstate the monetary payment as originally proposed.

Meanwhile, Senator Jacob Javits of New York, has recently introduced legislation calling for the annual award of 25 Presidential Medals to individuals who deserve National recognition for outstanding contributions in such fields as engineering, medicine, public service, education, law, agriculture, social service, science, labor and industry. The Javits bill provides for a tax-exempt cash grant of up to $10,000 with each award. The President would announce the awards following recommendations from a special board composed of three Senators, three Representatives and nine public members appointed by the President. According to Senator Javits his proposal is contemplated as being an American version of the famed Queen's Honor List.

# Freeman's Ruling in Detroit Stirs Societies' Reactions

The Sixth Circuit Court of Appeals in Cincinnati has refused to review the widely discussed opinion of Judge Freeman in the Federal District Court in Detroit holding both the Michigan and Ohio engineering registration statutes unconstitutional. Judge Freeman had ruled that the definitions of "practice of engineering" in both laws rendered them so vague and indefinite as to violate the constitutions of Michigan and Ohio and the 14th Amendment of the U. S. Constitution. The ruling, naturally enough, has caused a great deal of repercussion in the engineering profession, particularly in Ohio and Michigan.

*This interpretive report analyzing the implications of Modern Engineering v. General Electric was prepared by the NSPE legal staff.*

As reported earlier (AE, March, p. 17) the decision on unconstitutionality was handed down in a case involving a contract dispute between Modern Engineering Company and General Electric. General Electric alleged, among other defenses, that the performance of the contract by Modern Engineering constituted the practice of professional engineering under Michigan and Ohio law, and that the failure of the firm's engineering personnel to be registered amounted to a violation of the statutes which would prevent recovery. Judge Freeman, in denying G.E.'s motion to dismiss on this ground, said that the provisions of both statutes defining "practice of engineering" are so vague and ambiguous as to be unenforceable in law, and further, that because of this vagueness, both statutes are unconstitutional.

Judge Freeman said that the meaning of the clause in the Michigan definition, "wherein the public welfare or the safeguarding of life, health or property is concerned or involved," and the phrase, "are required to protect public health, safety and property" in the Ohio law, is impossible to determine. "Therefore," he concluded, "this court cannot, in justice, apply a harsh rule of unenforceability of the contract here on this ground, when the standards of the statute are so uncertain."

General Electric obtained permission from the Judge to appeal the ruling on the constitutionality point under a Federal statute which authorizes the Court of Appeals to consider preliminary questions of this nature in its discretion. The appellate tribunal, however, denied General Electric's application for an appeal. The case now goes back to Judge Freeman in the District Court for a decision on the merits to determine which party is entitled to recover under the contract and how much.

What then is the practical effect for the moment of Judge Freeman's decision? Although the situation is not entirely clear, it would appear that the District Court decision, standing alone, is not necessarily binding on the Michigan and Ohio courts as it relates to unconstitutionality under state law, particularly so in Michigan where the State Supreme Court had previously upheld the constitutionality of the registration statute. However, in any subsequent litigation involving the question of enforceability of professional engineering contracts, the Michigan and Ohio Courts could rely on Judge Freeman's reasoning if they were so inclined.

The Judge's ruling that the 14th Amendment of the U. S. Constitution is violated by the Michigan and Ohio statutes raises a much more debatable issue, since the State Supreme Courts are not the final authority on questions involving the Federal Constitution. Then, too, a similar case in the same Federal District Court would probably follow Judge Freeman's decision, although it is not necessarily binding on District Courts in other Federal judicial districts.

All told, it does not seem reasonable to conclude that the Michigan and Ohio laws are invalid on the strength of Judge Freeman's opinion, although certainly their effectiveness has been minimized to some extent. It is understood that both the Michigan and Ohio Societies are giving serious consideration to seeking amendments to their respective state laws to correct the deficiencies noted by Judge Freeman. On the national scene, it might be well for all state societies and state registration boards to consider amendments to the definition of "practice of engineering" in their laws to eliminate the type of language which the Judge found to be confusing and vague. In this connection, it should be noted that the latest revised Model Law contains language in the definition of "practice of engineering" similar to that found objectionable by Judge Freeman. Looking at the matter objectively, it would seem that the elimination of a "public welfare" reference in the definition of "practice of engineering" would, in fact, make the definition stronger and less restrictive.

**LATE NEWS . . . .**

**Word has just been received that the parties have settled their contract dispute out of court. Thus, there will be no trial before Judge Freeman on the merits. Further developments will be reported in subsequent issues of the *American Engineer*.**

# Strictly Business

***Personalities . . .*** The appointment of **William Vanderhout** as assistant general sales manager for **The Austin Company** was announced recently . . .

Mr. Vanderhout

**John M. Ferry**, former special assistant for installations to the Secretary of the Air Force, has joined the staff of **Metcalf and Eddy**, Consulting Engineers, of Boston . . . **W. H. Buchagen**, president of **Bucknell Engineering Co.**, Pittsburgh, Pa., has been elected a member of the board of directors of the national **Consulting Engineers Council . . . Bennett W. Burns** has opened his own consulting offices in Houston . . . **Andrew G. Betz** has been elected vice president of the **Wayne Iron Works . . . Crawford, Murphy & Tilly**, Consulting Engineers of Springfield, Ill., have named **Charles L. Ritchie** as an associate in the firm . . . **Professor Norman J. Sollenberger** has been appointed chairman of the Department of Civil Engineering at **Princeton University . . . Robert A. Briggs** has been appointed a civil engineer in the **Detroit Edison's** general engineering department . . . **Conant Dodge** has been appointed manager of the engineering department of **Weyerhaeuser Co.** of Tacoma, Wash. . . . **Dr. George Krsek**, has joined **International Rectifier Corp.** of El Segundo, Calif., as executive vice president and general manager . . . **T. H. Abrahams** has been named chief engineer of **Hoffman Electronics'** Instrument Division.

**Chester Lucas** has been appointed construction management advisor for the **Rio Tuma Hydroelectric Project** of the Empresa Nacional de Luz y Feurza of Managua, Nicaragua . . . **James E. Myer** has been appointed general manager of **Control Instrument Co.**, Brooklyn, N.Y. . . Appointment of **Harold W. Hansen** as senior planning engineer of the Paving Bureau has been announced by **Portland Cement Association . . . William C. Auld** has been appointed manager of purchasing for **Mobay Chemical Company**, Pittsburgh, Pa. . . . **C. R. Lambert** has been named chief engineer-manufacturing for **Philco Corporation's** Computer Division . . . **Erwin Tomash** has been elected vice president of **Ampex Corporation** and manager of **Ampex Computer Products Company . . . Peerless Photo Products, Inc.**, has named **Richard E. Hanson** as president and chief executive officer . . . **H. Chapman Rose** has been named to the board of directors of **The Siegler Corporation**, Los Angeles . . . **Richard O. Driskell** has been named to the board of directors of **Exact Engineering and Manufacturing, Inc.**, Oceanside, Calif.

Mr. Lucas

**Charles H. Grisemer** has joined the home office staff of the **American Bitumuls & Asphalt Company** as staff engineer . . . **Wisconsin Public Service Corporation** has elected **D. W. Faber**, **L. G. Roemer** and **P. G. Ellis** as vice presidents . . . **William C. Foster** has been named chairman of the board of trustees of the **Aerospace Corporation . . . Burtek, Inc.**, Tulsa, Okla., has named **Lawrence J. Gales** as director of commercial sales . . . **C. W. E. Locke** has been appointed vice president in charge of Asian operations for **Sandwell International Ltd. . . . Industrial Timer Corp.** has named **Leonard Rosendahl** to head the applications engineering group on programming equipment . . . The appointments of **J. Donald Anderson** as manager of sales promotion and **H. M. Saalfield** as general sales manager of **United States Concrete Pipe Co.** were announced recently . . . **J. L. Maloney** has been re-elected president of the **Clay Flue Lining Institute** . . . **Edwin M. Ott** has been appointed manager of marketing planning for the **Pennsalt Chemicals Corporation** . . . **The Herman I. Dorfman** firm of consulting engineers has recently promoted **Marvin M. Spector** to chief engineer, and **Leonard J. Bibbo** to resident engineer, both of the Northern Westchester office . . . **Richard G. Genton** has joined **Wheelabrator Corp.** as regional dust and fume engineer.

Mr. Grisemer

**Lewis M. Evans** has been appointed Eastern Region resale sales manager by the **Worthington Corporation . . . General Precision, Inc.** recently announced the appointment of **John C. Forrest** to the position of director of the **Engineering Division . . . L. Dennis Shapiro** was recently elected president of **Aerospace Research, Inc.**, of Cambridge, Mass. . . . **A. Stanley Nelson, Jr.** has been appointed general manager of the newly created division of **Alloys Unlimited, Inc.—The Electronic Glass and Ceramic Corporation** of Cambridge, Mass. . . . **Joseph H. Hayner** has been appointed director of technical planning of the **Patterson Moos Research Division** of **Leesona Corporation . . . Marshall S. Wright, Jr.** will be manager of the Washington, D.C., office of **Lockwood, Kessler & Bartlett, Inc. . . . Bryan J. MacDonald** has been appointed corporate controller at **Hudson Wire Company . . . IBM World Trade Corporation** has named **Gardiner L. Tucker** as the new director of development engineering . . . **Philadelphia Gear Corporation** announced recently the appointment of **Harold O. Kron** as vice president in charge of engineering . . . **Frederick L. Schuster** has been named to the board of directors of **Foster Wheeler Corporation.**

Mr. Evans

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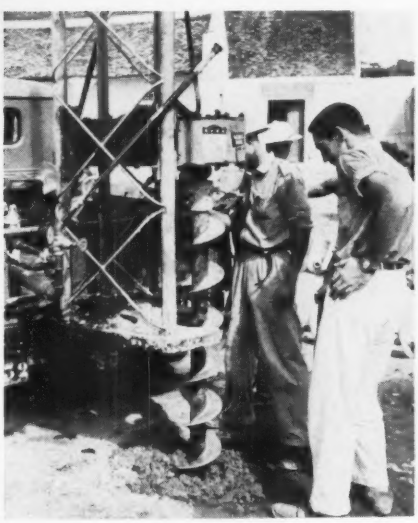
# The President's Peace Corps:

## What Does It Offer to Engineers? What Can Engineers Offer to It?

*Philippines . . .*

*. . . Indo China*

*Liberia . . .*



In *The Philippines* Frank Briley of North Carolina State College instructs in the foundry shop at a trade and art school, part of his mission to train teachers in Manila. In *Indo China* the American Economic Aid Mission begins one of the 600 wells to be drilled in North Vietnam this year. An American veterinarian in *Liberia* examines a brahman bull brought from Texas for breeding to improve cattle stock.

IN AFRICA, a well is dug in a native village under the direction of an American technician, providing the first really clean water the village has ever had. The technician leaves and the natives promptly fill the well with rocks. In Viet Nam, another American technician jury-rigs a well-driller out of miscellaneous timber and the back axle of a wrecked jeep. The word spreads, and soon, all over Viet Nam, natives are looking for wrecked jeeps.

Obviously there's a difference. It is the difference that will mean success or defeat for the recently initiated Point Four Peace Corps, the difference between a potentially excellent program and the mere multiplication of all the factors that can so effectively create a black eye for Americans and their country overseas. The above examples are drawn from the experience of public and private agencies that have had an opportunity to handle this sort of work in the past.

Bearing a significant amount of the responsibility for supplying the Peace Corps with its young men and women will be the engineering profession. Basic engineering skills such as road building, surveying, bridge construction and creating the most rudimentary mechanical devices are critically short in almost all areas where the Peace Corps will work. Mechanical, civil, electrical and agricultural engineering will all be needed. The job will be to supply engineering talent and guidance at the most basic levels of cultural and economic development. While teaching and agriculture will probably have the heaviest representation

in the Peace Corps, engineering will be needed to supply basic support for these other Peace Corps activities, besides offering major primary contributions of its own.

Such simple, taken-for-granted needs as roads, bridges, fresh water, rudimentary sanitation, shelter, irrigation or drainage are desperately required in many areas of the world and it will take engineers to provide them. Nor is it a matter of simply doing these things on a one-time basis. The ultimate aim must be to make the various host nations self-sufficient, to develop the necessary skills to allow them to progress at a rate that will bring them up to the higher standards of living that exist in other parts of the world.

The need for engineers in the program is not as great as the need for teachers or agricultural specialists, but the engineering profession will unquestionably provide an important part of the over-all program. For instance, one organization presently doing this kind of work asks for teachers to volunteer. Among the subjects to be taught are electrical engineering, general science, auto and farm mechanics. For all teachers the qualifications include the ability "to assist in simple community improvement projects such as . . . construction, sanitation, water supply, basic road construction and bridge construction." It is plain that many basic engineering skills are needed. It would, for instance, be hard to find a man better qualified for the above jobs than an engineer who has a background that includes some teaching experience.

At the University of *Indonesia* an American Professor assists students in editing the student's architecture magazine. Two *Ethiopian* student teachers learn from a USOM advisor how to make leather working tools from nails, an example of how the

*Indonesia...*

*...Ethiopia*

*Iraq...*

use of indigenous and simple materials is emphasized in arts and crafts classes. In Baghdad, *Iraq*, an agricultural specialist examines an experimental silage with an official of a local experiment station.

WITHOUT trying to make the foot fit the shoe, it is worth quoting Rep. Henry S. Reuss (D-Wis.), co-author of the original provision for a Youth Corps study, on the place of the civil, mechanical and electrical engineer in the program: "There will be a tremendous need for all three. Next to teachers and agriculture specialists, I would rank the need for engineers as the third largest in the program."

Thus the engineer fits into the Peace Corps. The remaining question as far as eligible young engineers are concerned is, "What stands to be gained by taking part in the program?" While it is difficult to find any point of comparison, one fairly similar situation is found in the case of the young doctor in the military. His work is something between interneship and actual practice with opportunities and responsibilities that might otherwise be out of his reach.

A young Navy dentist once pointed out, "The schooling I had was never anything like this. In the two years I've been working for the Navy, I think that I would be safe in saying I have seen just about everything that can possibly go wrong with a person's teeth. In a great number of cases I've had the chance to work with situations that might only come up once in a lifetime of normal practice."

During last year's fighting in North Viet Nam thousands of refugees poured across the border to South Viet Nam. They were greeted with an almost total lack of facilities to take care of them. At the time there were a number of young Americans in the country under the sponsorship of International Voluntary Services, Inc., an organization of high standing with impressive experience in handling overseas youth programs. A team of IVS members was politely escorted into an area where some

80,000 refugees were staying and told, in effect, "There are something less than five acres of land and a water buffalo for each dozen families. Will you please take it from there?" The problems created by 80,000 people thrown out of their homes and into another country can scarcely be imagined.

Like the mountain that must be climbed just because it's there, the IVS team had little choice but to do the best they could. Within a few months, the great mass of refugees was settled, and rapidly becoming self-supporting. If this weren't enough, the IVS team began clearing the dense jungle in the area and experimenting with new crops for the refugees to grow.

In another case, *Time* magazine quotes a young Englishman in Africa working under Voluntary Service Overseas, a British organization similar to IVS. Wrote the 19-year-old of his job, "I have organized the burial of corpses in lead lined coffins; I have designed an African school; I redesigned our hotel. I have collected debts, fobbed off would-be explorers, drawn up contracts, been out with geologists, examined poisoned calves, taken statements, invigilated exams, and run the district (such as I was able) when the district commissioner was away for ten days. So as you see, life is full, busy, interesting and great fun."

OBVIOUSLY the experience available to the young engineer would be patently unobtainable in this country. Equally, the young engineer who has had this sort of experience is going to be more mature, more confident of himself and without doubt more valuable to his profession. One measure of what's available to the engineer participant: In its history, IVS estimates that only one out of ten applicants were accepted. This figure was compiled long before national spotlights were trained on the Peace Corps idea. It is more than safe to predict that this ratio will grow markedly higher as the program becomes more widely known. Thus, the selectivity of the program underlines the responsibilities that its people will have a chance to assume.

In the midst of the Laos fighting last year, a young American working for IVS was involved in a bridge building accident. He returned to the Unted States where one of his legs had to be amputated below the knee as a result of the accident. After a few short months of recuperation, he asked to return to Laos. He is there now.

In Africa a British youth is calmly taking full charge of a rubber plantation, a first-aid station and a primary school. Another Englishman in Bechuanaland wryly comments, "The veterinary officer here deals with foot-and-mouth disease among 60,000 cattle. Now that I'm here, he only has to deal with 30,000."

This picture is not the one that has been conjured up so frequently by cynical or uninformed critics of the Peace Corps. It is certainly something more substantial than draft-dodging, gum-chewing adolescent, would-be Albert Schweitzers blanketing the earth with Beatnikism and soft-drink bottles. The difference between these two pictures will ultimately be the difference between the success and failure of the Peace Corps.

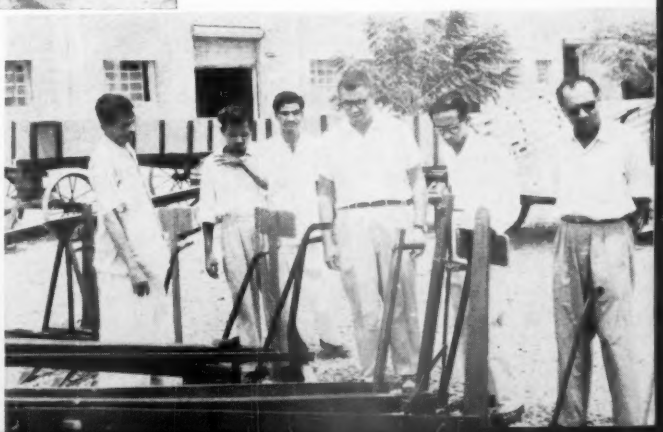
The responsibility falls into two categories. First, for whoever administers the Peace Corps there will

In *Jordan*, an elementary school teacher conducts an arithmetic class with visual aids he has made, while at the same time instructing trainees of an in-service training course. In *Korea*, ICA representatives inspect one of the

...Jordan

Korea...

...West Pakistan



many buildings that are part of a national housing project in that country. In *West Pakistan*, an agricultural engineer explains the features of several improved bullock-drawn implements to local people.

# University of Pittsburgh Students

The people who will actually take part in the Peace Corps will most certainly be drawn from today's college campuses. Because of this, AMERICAN ENGINEER felt it would be pertinent to find out what the engineering student thinks about the Corps, and whether or not he plans to take part in it, if he has the opportunity.

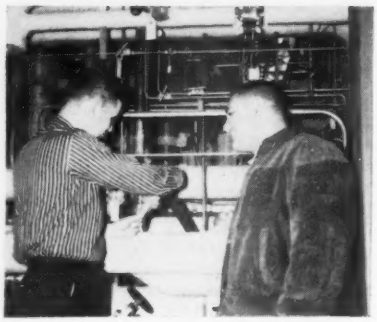
To get the answers to these questions, we asked for some help from the Student Chapter of the Pennsylvania Society of Professional Engineers at the University of Pittsburgh. These questions were asked:

Do you consider the proposed Peace Corps to be a good idea? Would you consider taking an active part in it? Do you feel that such participation would be of professional value to you? How much time would you be willing to spend doing this sort of work in terms of years? How do you consider the proposed Corps in relation to your military obligations? How much do you feel could be accomplished through such a program? Do you feel the hardships that might be encountered would be compensated for by a sense of service in the work? What sort of training would be needed, in your opinion, to become an effective member of the Peace Corps?

Of the students queried, 118 replied. Without stretching the statistics, support for the program—in principle—was overwhelming. Of the respondents, 95 said they thought the program was a good idea. Only 19 thought it was not, and four offered qualifications which precluded a firm answer.

From a more practical standpoint, the answers looked this way. Do you think participation in the program would be of professional value to you? Seventy-four students said yes, 25 said no, and 19 said it would depend on varying factors.

Do you feel the hardships encountered would be compensated for by a sense of service in the work? Perhaps with the Engineer's Creed in mind, 51 students said yes. The "noes" and "no opinions" numbered 30 apiece. (Note: Not all of the students answered all of the questions; thus, totals for any given question will not necessarily be 118.)



Ron Efkowicz (l.) and Rich McMahon, mechanical engineering, both told AE they would consider serving in the Peace Corps.

On actual participation in the Corps, 51 students said they would consider it, 49 said they would not, and the remaining 20 presented various reasons that added up to "no opinion." It is interesting to note that of the "noes" on this question, 19 said they were either veterans, or committed to military service through ROTC or some similar program.

Substitution for military obligation ranked high in the minds of the students. Seventy-nine replied that the Corps should be a substitute for the military obligation, the highest total except for the original endorsement in principle. Only eleven felt that it should not be a substitute, and 28 offered other opinions, such as some combination of Peace Corps/Military.

Generally, it seemed to be felt that two or three years would be about the right length of time to serve in the Corps, with 60 students specifying one or the

*Ecuador . . .*

Dr. Russell Destoriers is one of many North Americans employed by ICA to assist Latin Americans in improving their agricultural techniques and production. He is employed as a plant pathologist and gives technical training to students and farmers.

be the problem of selection and training. If the wrong people are chosen for the program, or if the people chosen are not adequately trained, this country could easily find itself facing one of the most sweeping international fiascos since Napoleon tried to take Moscow. On the other hand, if the professions who will be participating in the Youth Corps do not provide the best of there available young people, all of the selectivity in the world isn't going to do much good.

In simplest terms the Peace Corps is a gamble. Well-managed, carefully administered and using only the absolute elite of those volunteering for participation, it can

# . . . Evaluate the Peace Corps

other time period. Next highest figure was no time at all, running about parallel with the number who said they wouldn't consider serving in the program at all. Commented one student, "two years willingly, three years dutifully, four or more years grudgingly."

Most frequently mentioned sorts of training needed were language (52 mentions) and local customs (43 mentions). No other single item was mentioned often enough to really approach these two. Among the types of training mentioned were economics, sociology, religion, diplomacy, guerilla warfare and political science.

While statistics are valuable, they make for fairly dry reading. Taken from a pro/con standpoint, this is how some of the comments stack up:

- "I think it an imaginative proposal. Its motive is noble and sincere, and it should prove effective towards achieving its end. There is no better way of making peace than with a warm handshake."
- "Why should we teach others so that they can use their new found knowledge against us? Let's educate Americans first."

William Lee, faculty advisor to the NSPE Student Chapter at Pitt, assisted in surveying students on the Peace Corps.

- "I think the satisfaction of helping people less fortunate than myself and also helping my country in some small way would compensate for many hardships."
- "Sense of service in the work? Who are you kidding? One would probably lose money in undertaking such a job. A good engineer could get a good job in the U. S. at more money."
- "I have already fulfilled my tour of duty in the U. S. Army, while serving in Korea. I am also married and have one child. However, if some means could be found to take my family along, I would relish foreign service and would be willing to serve anywhere in the world."

These, of course, are only a few of the comments received. The ones quoted here are representative of others that were received. On the whole, "cautious" would probably best describe the majority of the answers. Frequently mentioned was the chance of the whole program's being bogged down in Government red tape. Also, there was a fair amount of skepticism that young college graduates would be mature enough to work effectively with an organization such as the Peace Corps.

But for every skeptic, it was not hard to find another respondent who endorsed the program for its more optimistic aspects. Perhaps from this point of departure, it is fitting to cite one more quotation included on the questionnaires:

"Anything that would benefit other peoples of the world and raise their opinion of us has to be a good idea, as this idea should. . . . I think if this idea does no more than get people interested in foreign service, then it is worth its price. Who knows how many prospective Tom Dooleys or Schweitzers there are in our midst?"

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become one of the most effective Cold War tools the nation possesses in underdeveloped (and usually uncommitted) areas of the world. If the program is poorly run, if it becomes a political football, if it allows itself to be manned by anything less than the very best young people, the gamble will be lost and the results could be grave —perhaps more grave than most people realize. In many parts of the world members of the Youth Corps will provide the first contact local people have ever had with the United States. Impressions created will be lasting, and clearly, they had better be good.

As it stands at this writing, the Corps will have a fair degree of built-in selectivity. For one thing participants will receive only token salary. Only basic expenses will be paid. For another, the Corps is not a "sure way to beat the draft." Only deferments will be granted in the same way that they are for students. (It is worth noting, however, that IVS has never had any of its participants drafted, and that practically anyone who has worked on this aspect of the program agrees that the deferment will be tantamount to an exemption.) With few exceptions duty with the Corps will be in remote, poor, underdeveloped and rural areas. It will not be an easy way to get a boat ticket to Europe. The tour of duty could well be longer than the military, and it is unlikely that there will be a PX available where Corps members will serve.

THUS, it seems that a great number of opportunists, people who are looking for a soft touch, or people simply trying to beat the draft will quietly rule themselves out of the Corps at the start. Yet this is not enough. It is the next step in the selection process that will be crucial. This step is weeding out those applicants who mean well but simply don't measure up to the necessary high standards.

*(Continued on Page 50)*

# Professional Profiles

John Bunch, P.E., faces some unique problems handling Madison, Wisconsin's traffic since the city has three lakes within its limits. A corner of the largest lake appears upper right in the photo. Others are located near the lower left and right limits of the picture.

In an engineering activity that has only recently won recognition as a profession and which still competes with every driver for the title of "expert," John H. Bunch, Madison, Wisconsin's first and only traffic engineer, has found acceptance for his field of science in a highly skeptical university city. From a last place rating for traffic engineering in its population bracket, to National recognition by the Institute of Traffic Engineers for outstanding traffic engineering performance among all cities reporting in the National Safety Council's Traffic Inventory Program is a boast that Madison could make after only three years of that department's existence. In fact, improved traffic conditions in the city have resulted in decreased automobile insurance rates since 1957.

After graduation from high school in Sullivan, Indiana, Bunch began his career with the Indiana State Highway Department, progressing from inspector of road construction to state traffic survey engineer. At the time the Indiana registration law went into effect in 1935 he refused to write on the examination for registration under the "grandfather" clause, but studied for and passed the full examination for registration as a professional engineer in 1948. At that time the Indiana Registration Board first accepted traffic engineering as professional engineering experience.

In 1952 at the request of the West German Government the U. S. State Department sent John Bunch to Germany for a three months' study of traffic conditions in that country's major cities. On return he accepted a position as traffic engineer in the City of Fort Wayne, Indiana, and from there went to Madison, Wisconsin, in January, 1954.

While with the Indiana Highway Department he organized the Indiana chapter of the Institute of Traffic Engineers. He was also a consultant for the Indiana Traffic Council and a guest lecturer at both Purdue and Indiana Universities. His survey of traffic conditions at the Indianapolis "500 Mile Race" of 1946 and 1947 effected a plan of operation still used today. Using the same techniques as he did in Indianapolis, John Bunch promoted a traffic plan for Madison whereby 65,000 football fans are regularly evacuated from the University of Wisconsin stadium and sent on their way in forty minutes.

Mr. Bunch is a registered professional engineer in both Indiana and in Wisconsin, is a full member of the Institute of Traffic Engineers and a director of the Midwest Chapter of that organization. He is a member of the Wisconsin SPE.

# FROM WASHINGTON

BY
MILTON F. LUNCH,
*N.S.P.E.'s Legislative Counsel*

## *Missile 'Mess'* ►

The second round of what has been described as the missile base construction "mess" will likely take place behind closed doors when representatives of the military services appear before the House Military Construction Subcommittee to testify on requested appropriations for the next fiscal year. Subcommittee Chairman Harry R. Sheppard of California has stated: "This essential program has also been marked by an instability in design, as attested to by numerous and costly change orders unheralded to my knowledge in any construction program. This all adds up to a sloppy job which is costing a great deal more than expected. . . ." In its report, the Subcommittee listed an example in which the preliminary A-E estimate was $51,000, the Corps of Engineers preliminary estimate was $500,000, the contractors proposal was almost $8 million and the final settlement almost $5 million. The Subcommittee commented: "Ivory tower estimates by architect-engineers and personnel not acquainted with on-site conditions must give way to consideration by personnel realistically familiar with the construction problems involved." Despite the somewhat vague criticism of architect-engineer activities in the program, it is clear that the Subcommttee's primary objection is to the loosely drawn administrative operation of the military agencies, and to the lack of centralized direction and decision. An all-out effort must be made to improve conditions in the design area, the report added. "There is much room for improvement on the part of technical missile development personnel in providing Air Force design architect-engineers with definite basic criteria."

## ◄ *Highway Safety*

**Rep. Kenneth A. Roberts of Alabama is pursuing vigorously his campaign to provide Federal leadership in automobile safety. As chairman of the Special Subcommittee on Traffic Safety, the Alabama legislator has introduced a bill to require passenger-carrying motor vehicles purchased for use by the Federal Government to meet certain safety standards to be devised by the Secretary of Commerce. The technical standards would probably be developed by the Bureau of Standards. The commercial standards would prescribe safety devices required for Federal autos. Backers of the legislation are hopeful that the Federal criteria would become general commercial practice. The Federal Government is reported to be the largest single purchaser of automobiles. In another measure, Rep. Roberts has called for a White House Conference on Highway Safety, to be attended by a cross-section of experts in various fields, including the engineering profession. Before leaving office, President Eisenhower created a Federal Interdepartmental Highway Safety Board to provide leadership and coordinate the traffic safety aspects of programs carried on by the Federal agencies. Roberts proposes direct Federal action to require that hydraulic brake fluid sold or shipped in interstate commerce for use in motor vehicles meet certain specifications prescribed by the Secretary of Commerce, with a $1,000 fine or imprisonment for violation of the standards.**

### Patent Policies ►

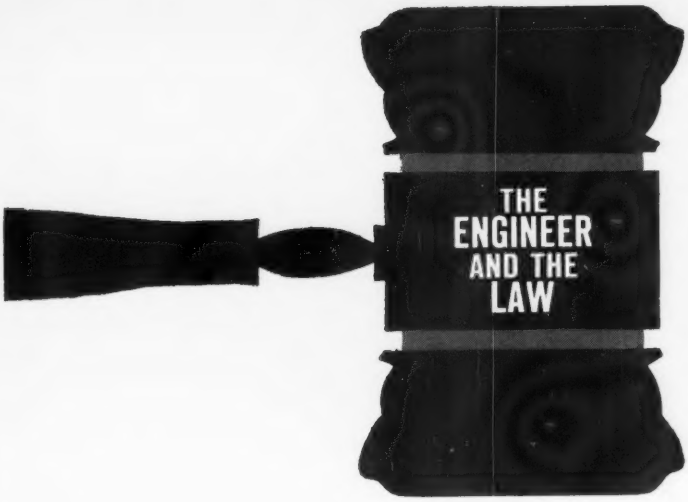
Changes in patent title policies have been announced by the Department of Defense as the result of studies and recommendations last year of the House Subcommittee on Patents and Scientific Inventions. In a letter to Rep. Overton Brooks, chairman of the House Committee on Science and Astronautics, the Defense Department said it is providing some exceptions to the general policy of obtaining only a comprehensive license for the Government in the division of patent rights flowing from the performance of work under the Department's research and development contracts, and generally leaving the commercial rights with the contractor. The agency will now consider taking full title in new technological fields where there is no significant non-Government experience to build upon and the inventions resulting from the research will likely dominate the field or be of critical significance in it. Full title may also be taken where the contractor is largely coordinating or directing the work of others, or in cases of overriding public interest in inventions directly relating to the health or safety of the public.

### ◄ Federal Patent Priority

**In a related development, Senator Long of Louisiana has called for a Federal Inventions Administration to administer a national patent policy, based on the concept "that where the Government pays for research, it should obtain patent rights in any resulting invention or discovery so that these may be available for the use of all the people, instead of just a favored few." The bill would provide for the retention by the United States of full proprietary rights to all scientific and technological discoveries and inventions resulting from the application of resources of the U.S., and for the administration and use of the proprietary rights to promote maximum practicable dissemination and uses of the discoveries and inventions. The Long bill would also authorize monetary awards for any scientific, technical or medical contribution to the United States which is determined by a board to have significant value to national defense, public health, or any program administered by an executive agency pursuant to specific authorization. The persons receiving the award would be required to grant the Government permission to use the invention without additional compensation. An award over $100,000 would require congressional approval.**

### Public Works Hustle ►

The Administration's speed-up and extension of public works activities is moving through Congress with relatively little opposition. A major measure along this line is the area redevelopment bill which embraces technical assistance to local communities in planning economic development and expansion of industrial resources, loans when conventional lending facilities are not available, modernization of public facilities, such as access roads, industrial water supplies, industrial parks and public utilities and expansion of facilities for industrial training. The President has called upon all state governors for "acceleration of state and local projects that are genuinely useful and will provide immediate jobs and business help." He advised the state executives that the Federal Government has released for obligation $724 million for highways and $350 million for direct federal construction and construction grants, primarily for schools in federally affected areas, hospitals, and waste treatment facilities. The Bureau of Reclamation has placed its engineers on a 58-hour week to expedite approved reclamation projects. The President also told Congress that the Community Facilities Administration is reducing interest rates on new loans for public facilities and broadening the program to make eligible for loans many communities and certain types of public facility projects which are now excluded.




## Engineers, Patent Laws Questioned in Ohio Case

THE relationship of engineering practice to patent practice has long been recognized, while at the same time there has been considerable uncertainty as to where one stops and the other starts. A recent decision of an Ohio court deals with this grey area.

In mid-1960 Battelle Memorial Institute was enjoined from performing certain legal services for so-called "sponsors" in connection with patentable ideas flowing from research performed for the sponsors by Battelle. The court held that the attorneys for Battelle were performing legal work in their drafting of contracts, applications, affidavits and assignments, rendering of opinions as to patentability, infringement and interference, and in giving advice as to the rights and duties of persons and corporations. The court observed that the fact that many of these services were directly related to the obtaining of patents and inventions did not change the character of the services from legal to nonlegal. The court assumed that the men performing these services were attorneys in the employ of Battelle, but it appeared that some of them were not attorneys.

Subsequently, the Unauthorized Practice of Law Committee of the Ohio State Bar Association advised Battelle to discontinue its actvities in connection with the seeking of patents before the United States Patent Office. Battelle brought suit for a declaratory judgment to ascertain its rights in the face of a threatened lawsuit. The court rejected Battelle's basic contention that because the Federal Government has exclusive power and control over the issuance of patents it has sole authority to determine who may engage in such practice. Rather, the court held that "no agency of the Federal Government can dictate, define or limit the practice of law in Ohio." This position, the court added, does not conflict with the undoubted exclusive right of the Patent Office to determine who may practice before it. "We do not presume to comment upon the services which employees of [Battelle] perform outside the State of Ohio, and specifically in the U.S. Patent Office in Washington, D.C."

Battelle argued that when its patent section employees perform duties leading to the obtaining of a patent or an invention, those duties fall within the definition of practice before the Patent Office, which takes them out of the category of practice of the law since the Patent Office is an administrative agency. "We do not agree," the court said, "that the definition of the practice of law is controlled by the agency under which the work is performed. It is incorrect to say that all work performed in connection with the obtaining of a patent or invention is necessarily nonlegal, or is necessarily not the practice of law, simply because it is done under rules and requirements of an administrative agency such as the Patent Office."

The work done before an administrative agency may or may not constitute the practice of law, it was added. "If it does constitute the practice of law and is done in Ohio, it must be done by attorneys who are duly licensed to practice law in Ohio. This requirement is in addition to any other proper qualifications or conditions which may be required of or imposed upon those who seek to practice before the Patent Office."

This decision, if followed generally, would seem to raise the question of whether any patent agent (nonlawyer) admitted to practice before the Patent Office could continue his practice lawfully. Despite the court's reference to the propriety of nonlawyer patent practice "in the U.S. Patent Office in Washington, D.C.," the fact is that such practice is not carried on in the Patent Office, but in offices or places of business covered by similar prohibitions against the unauthorized practice of law. It is not indicated at this time whether the Battelle case, or one similar, may eventually reach the Federal Courts. If so, previous Supreme Court decisions on other Federal-state conflicts of jurisdiction indicate that the Federal judiciary might take a different view about the supremacy of Federal authority.

Meanwhile, the first step toward an eventual solution of the conflict has been taken in the form of a recommendation from a Patent Office Advisory Committee, suggesting that all future applicants for admission to practice before the Patent Office be attorneys at law in good standing, or otherwise possess legal qualifications satisfactory to the Commissioner of Patents, *and* possess a degree in engineering or physical science from a recognized school, or have the equivalent of such training. Such a rule, if adopted, would recognize the interlocking and overlapping of engineering/science and law in

*(Continued on page 53)*

# M.I.T. Looks to the Second Century

It would be difficult indeed to measure the debt that the engineering profession owes Massachusetts Institute of Technology. The leadership that MIT has exercised, its habit of setting standards in ever improving engineering education, and the continuing excellence of MIT graduates are only a few of the basic debts that it would be hard to repay.

This month, MIT celebrates its hundredth birthday, and AMERICAN ENGINEER is proud to join the many people and organizations throughout the country who will be offering congratulations to a university that is a pacesetter for the entire engineering profession.

It is probably typical that the Massachusetts Institute of Technology is celebrating its centennial in part by starting a fund for improvements during its second hundred years.

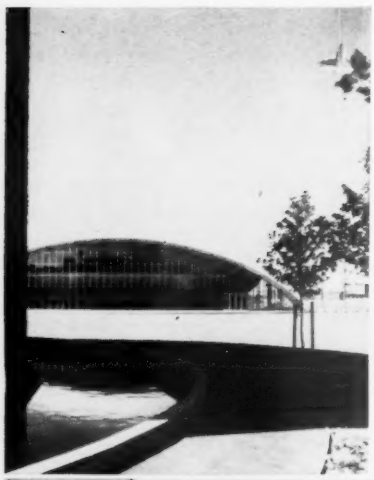
This is true for a very simple reason: Throughout the first century, MIT has dealt almost wholly with the future, has used its past and traditions only as they could be plowed back into future plans, developments and action.

In many ways, MIT's position is paradoxical. It would seem more likely that an institution of MIT's history and respected academic position would lean more to the conservative end of the spectrum. And in a sense, the great school on the banks of the Charles River is conservative; in the past, and clearly in the future, MIT will do its utmost to maintain the highest possible level of academic excellence for the engineering student, setting standards that are followed literally throughout the world.

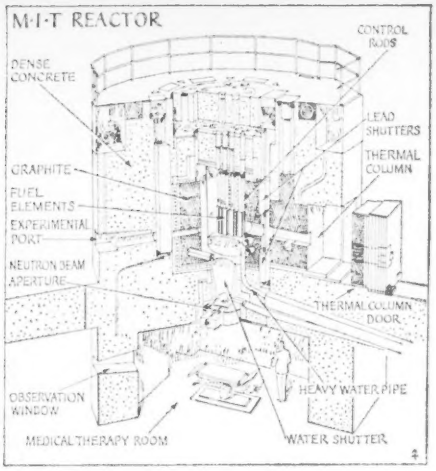
But how closely this brand of "conservatism" is tied to the future can easily be seen. MIT's business *is* the future. Its students are prepared for their future place in the technological world. Its courses are designed to meet future needs of the students, and are constantly redesigned to keep abreast of technological progress. The physical plant at MIT is continually changing to incorporate the needs of future classes. And with MIT's active participation in a wide variety of governmental activities, plus its extensive independent research, the institute is inextricably bound with the technological future of the nation itself, and in many cases with that of the entire world.

Unquestionably, Massachusetts Institute of Technology is one of the outstanding leaders in its field. In practically any major scientific or engineering development in the past century, it is likely that MIT had a hand, and more often than not, a guiding hand. Cybernetics, the atomic bomb, first radar contact with another planet, the new, fantastically precise devices needed to guide intercontinental missiles and space craft—with all of these MIT was in on the ground floor, building for the future.

The history behind MIT's present position in the world of science and engineering began just a cen-



Setting the standards which others follow is one of the traditions at MIT. Above at the left is the chapel at MIT. Below, left, is an elementary school made almost entirely of plastics, and designed by MIT's Department of Architecture.




**The students and the equipment with which they learn to work. While the physical plant at MIT is extensive and thoroughly modern, it is effective only to the extent that it provides the experience to make excellent young engineers.**

tury ago. On April 10, 1861, the state of Massachusetts granted a charter for a school where students were to learn "exactly and thoroughly the fundamental principles of positive science, with their leading applications to the industrial arts." The founder was William Barton Rogers, a professor of geology who had formerly taught in Virginia. As the founding date indicates, the Civil War began almost simultaneously with the signing of the charter. First classes did not begin until 1865.

While Cambridge, Mass., and MIT are presently so closely associated, Rogers opened his new experimental school in Boston proper, moving across the Charles River some fifty years later in 1916. It was perhaps indicative of things to come that in its original conception MIT was an experiment, an attempt to meet what Rogers felt to be a growing need for trained engineers and scientists in the future of a rapidly industrializing nation.

Once across the river, MIT began to grow into its present form, preparing for the tremendous boost it provided science and engineering during World War II, and becoming the huge and excellent institution that it is today. This is not to say that all of the university's growth has come in the past twenty years. A simple listing of past accomplishments would easily prove otherwise. But in a five-year period during World War II, MIT handled some $100-million worth of research and development contracts, easily ranking itself as one of the largest research and engineering plants in the world. As for its success in this sort of "big business," the results speak for themselves.

In retrospect, it is much too simple to gloss over the hard years that MIT endured before reaching its present position, and too easy to overlook what actually went into making the school what it is today. In the early years, lack of money was the constant plague of the school; there was never really enough to go around. For more than a short time, the men in charge of the new school thought seriously of selling control to neighboring Harvard. Scrimping, cutting costs, an occasional grant and a large measure of stubbornness and hope kept the then small school operating independently, and generous gifts from alumni and an anonymous donor (later discovered to be George Eastman) finally enabled the school to start work on the Cambridge campus that is now the familiar symbol of the school.

"The true test of civilization is, not the census, nor the size of the cities, nor the crops . . . no, but the kind of man the country turns out." It takes only slight paraphrasing to apply this comment by Ralph Waldo Emerson to a university. And if the kind of man a school turns out is the measure if its excellence, MIT again ranks high. A glance at current newspapers shows that more than a few major stories are there either about or because of MIT alumni. For instance: Project Mercury, America's man-in-space program has as its assistant director Charles J. Donlan ('38); *Time* magazine's men of the year this year included Charles S. Draper ('26), Robert B. Woodward ('36) and William Shockley ('36); the Army's entire missile program has been turned over to Maj. Gen. August Schomberg ('38), who will find himself working with William B. Bergen ('37), president of the Martin Co., developers of such missiles as Pershing, Lacrosse and Titan.

There are few areas of business where MIT hasn't made itself felt, and when its graduates enter a business, they have an uncanny tendency to go to the top. President of the New York Central System is A. E. Perlman ('23); J. S. McDonnell ('25) heads McDonnell Aircraft; Allegheny Ludlum Steel moves under the reins of E. J. Hanley ('24); Commander, Naval Air Force, U. S. Pacific Fleet is Vice Adm. C. E. Ekstrom ('31); Semon E. Knudson ('36) heads

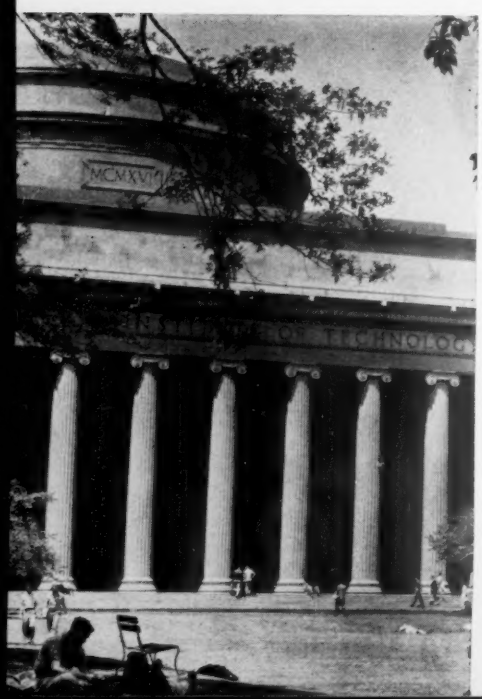
General Motors' Pontiac Division.

The Mayflower II was designed by a naval architect from MIT, and Disneyland was built under the direction of an MIT man. The gold trophy for outstanding performance at the International Congress of Magicians went to "Fu Ling," otherwise Bernard Whitman ('35).

For the first hundred years, the investment in the future has paid ample dividends at Massachusetts Institute of Technology. For the second century there is every indication that the dividends will continue to accumulate.

No one has a greater right to evaluate a university than the man who has graduated from it. With this in mind, AMERICAN ENGINEER contacted a number of outstanding MIT graduates and asked them for their comments on the one-hundreth birthday of their alma mater. These are some of the answers we received.

**Alfred E. Perlman ('23), president of the New York Central System, has been a consistent newsmaker in recent years because of his dynamic management of New York Central. Starting in the engineering department of the Northern Pacific Railroad, Perlman worked his way up through various jobs and various railroads to his present position. These are his comments:**



Facing the Charles River from the end of MIT's quadrangle is the "great dome," which, with its many columns is perhaps symbolical of the steady position that MIT holds in the world of Technology today.

**A**S STUDENTS at MIT we were taught that we should always search for greater knowledge and new techniques, and I find it gratifying that the Institute is accelerating its pace in reaching for new scientific horizons. To me, this illustrates the basic climate, attitudes and desire to serve, that have made MIT unique to engineers and to the science of engineering. We are all acquainted with the disciplines represented by the recognized engineering professions. Throughout its first 100 years MIT contributed much to each of these sciences and to many of its individual practitioners. During all of this time there has been conscious and controlled adjustment to change, brought about by the demands of an ever-increasing store of human knowledge and experience.

"Some of the scientific breakthroughs in the fields of electronics and nuclear physics have been spectacular, but I find it particularly gratifying at this time to see the work in progress on the 'life sciences.'

"It is fascinating to find work in progress at MIT in the basic mechanism of reasoning, the thousands of chemical reactions that occur in living cells, the electrical nature of nerve impulses, the chemical and electrical processes involved in seeing, the identification of enzymes involved in protein reduction and many more. It is of concern to all engineers to realize that the need for such work is recognized and supported by engineers. How better to gain new knowledge for application in the fields of computer logic, mass communication, organic chemistry, or food preservation?

"Such work could not readily or easily be undertaken if prior work by engineers had not made possible electronic microscopes, gas chromotographs, micro manipulators, infra red spectrometers and other qualitative and quantitative devices and techniques.

**Robert Sprague**
*Head of Sprague Electric Co.*

**E. J. Hanley**
*President of Allegheny Ludlum Steel Corp.*

**Alfred E. Perlman**
*President of New York Central System*

"By undertaking such a program, we find MIT recognizing and supporting an area which will make new basic knowledge available for engineering application. By recognizing the need itself, it has contributed an evaluated opinion that engineers and engineering science have a vested interest in the unknown areas of living things.

"To us, the freedom to evaluate, reduce to organized knowledge, subject to searching rigid testing and to report this knowledge—all in a climate agreeable to change—is typical of MIT.

"Experience has indicated that many social institutions the age of MIT lose their identity and purpose. As a result the rate and value of their contribution to the society that created them diminishes or reaches a plateau. With the 'new' work now in progress at MIT we are sure that valuable contributions will be made to the engineering sciences at an ever-increasing rate. This freshness of approach and willingness to reach out to ever new horizons will continue to bring this whole world a better way of life and will also improve the value and work of the individual in our future society."

*(Continued on page 48)*

# Report on a Case by the Board of Ethical Review

**The Board of Ethical Review was established to provide service to the membership of the NSPE by rendering impartial opinions pertaining to the interpretation of adopted Canons of Ethics and Statements of Policy regarding professional conduct. The *American Engineer* will print findings on specific cases as they are reported by the BER to the NSPE Board of Directors.**

## Case No. 60-4

### Subject:

*Recruiting Engineers—Section 8, Canons of Ethics; Section 22, Canons of Ethics; Rule 39, Rules of Professional Conduct.*

### Facts:

A number of companies which require engineers for the design and development of their products have found it difficult in recent years to recruit a sufficient number of qualified engineers. As one means of contacting engineers interested in their type of work, these companies, individually, maintain temporary recruiting facilities in connection with various industrial exhibitions and meetings of professional and technical societies to interview those engineers in attendance who might be seeking employment, or a change of employment.

In some cases, other companies engaged in similar types of business and requiring engineers with the same type of background and qualification, are fearful of losing their engineers to their competitors and therefore will not allow their engineers to attend exhibitions and meetings where their engineers might be enticed to other employment.

### Questions:

1. Is it ethical for a company to maintain recruiting facilities at industrial exhibitions and professional and technical meetings?

2. Is it ethical for an employed engineer to discuss employment with a competitor of his current employer?

3. Is it ethical for an employed engineer to accept employment with a competitor of his current employer?

4. Is it ethical for a company to prohibit their engineers from attending exhibitions and meetings where the engineers might be exposed to other employment offers?

### References:

Canons of Ethics—Section 8—"The engineer will act in professional matters for each client or employer as a faithful agent or trustee."

Section 22—"He will endeavor to provide opportunity for the professional development and advancement of engineers in his employ."

Rules of Professional Conduct—Rule 39—"He will encourage attendance at professional or technical society meetings by his engineer employees."

Miscellaneous—"Recruiting Practices and Procedures—1959," ASEE; NSPE Professional Policy No. 19 (a)—Freedom of Employment

"An individual professional engineer has the right to seek and accept other employment in his field, provided the seeking and acceptance of such other employment is consistent with the Canons of Ethics and the NSPE Rules of Professional Conduct as it pertains to relations with clients and employers. NSPE looks with disfavor on any provisions in contracts, or conditions of employment, which limit the individual's choice of employment.

"The National Society of Professional Engineers further declares that for every right there is a corresponding responsibility, and a professional engineer employee should assume his responsibility of loyalty to his employer and should normally notify his employer of his desire and reason for a change of employment prior to seeking such other employment, provided there are reasonable grounds to believe that the employer will not thereafter discriminate against or otherwise jeopardize the current status of the employee as a result of such notification."

### Discussion:

It is desirable, at the outset, to distinguish the Canons of Ethics and Rules of Professional Conduct, which apply only to individual engineers, from desirable business practices or policies which should be followed by companies to promote professional concepts among their employees. In the latter situation reference may be made to general policy statements or recommendations of various organizations, but these do not have a direct bearing upon the actions of engineering employees of the company who act only as agents of the company in implementing company policies of the type stated in questions 1 and 4.

It is not possible to answer in purely ethical terms the related questions of company policy in maintaining recruiting facilities or permitting or prohibiting engineers in the company from attending exhibitions and meetings where recruiting might take place. Engineers in policy-making positions in the company should keep in mind the Canons and Rules with reference to encouraging professional and technical development in considering company policy. It is desirable to permit as much attendance and participation of engineers in such meetings as will be consistent with the professional development of engineering personnel and company interests.

For additional guidance, reference is made to the publication of the American Society for Engineering Education, "Recruiting Practices and Procedures—1959." This statement, which has been endorsed by NSPE, is specifically geared to college recruiting, but the general principles enunciated are applicable to many aspects of recruiting activities at exhibitions and techni-

*(Continued on page 53)*

# Professional Concepts for Engineering Students

By **FREDERICK B. MORSE, P.E.,**

*Professor of Mechanical Engineering, Purdue University*

Typical classroom scene of the course *The Engineering Profession* at Purdue's School of Mechanical Engineering. Student in center front row is so intent on promoting his profession he wears the words "Mechanical Engineering" on his trousers.

Why teach a course in professional concepts to engineering students? After all, few medical schools offer a course in professional attitudes *per se:* They depend upon precept and example for inculcating professional ideals and ethics. Why not, therefore, let the engineering student pick up his ethics by precept and example?

The apparent success of some medical schools in indoctrinating professional concepts by precepts and example is no doubt based on the long heritage of medicine as a profession. Since his high school days the medical student has observed that the public has regarded medicine as a profession and this is taken for granted in medical school.

The faculty of the School of Mechanical Engineering at Purdue University feels that the indirect method of teaching ethics and professional awareness by precept and example would be too ineffective; hence, the problem has been met head on with a required course, "The Engineering Profession." After completing the course the graduating senior has some understanding of his responsibilities as a professional practitioner.

What do you put in a course on professionalism? Do you just recite the "Canons of Ethics for Engineers," and say this must be good because it was written by ECPD and subsequently endorsed by all major engineering societies? How dull that would be! The Canons, wonderful document that they comprise, is just a collection of words until the individual is sufficiently mature to see a need for and to comprehend the moral philosophy of the maxims therein.

The outline of any course, obviously, depends upon the objectives, of which this course has nine.

- To introduce the student to the basic principles of contracts.
- To introduce the student to the subject of patents.
- To discuss the criteria for a profession.
- To stimulate the student's interest in professional matters.
- To discuss the obligations and responsibilities of the professional engineer.
- To interest the student in his own professional development.
- To imbue the student with a desire to succeed.

These objectives expand into the topics and class hours summarized in the accompanying table.

The growth of engineering registration in the United States, the formation and function of the National Council of State Boards of Engineering Examiners, and the EIT program are discussed. Students are encouraged to write the EIT examination.

The Indiana State Board of Registration for Professional Engineers and Land Surveyors conducts the EIT examination on the Purdue University campus in November and April of each year. The Board also takes the EIT examination to campuses of the other three ECPD accredited colleges in Indiana.

Section 1 on the Canons of Ethics is a good starting point for discussing student interest in professional matters. "The engineer will cooperate in extending the engineering profession . . . by contributing to the work in engineering societies, and . . . [the] engineering press." This is interpreted to the student that, as a minimum, the young mechanical engineer should be active in ASME, or one of the other technical engineering societies, and in NSPE. A recommendation is made that those students who are not members of an

engineering society should join while they are on the campus. Seventy per cent of our seniors are already members of a student branch of one of the technical societies. The student is urged to become a junior member of NSPE as soon as he receives his EIT certificate.

Well, that's great! But we must not stop here, for within a short time after graduation the young engineer will hear about the Blank City Engineers Club, The Blank City Association of Such-and-Such Engineers, The Blank City Engineering Society, Engineers and Scientists of America, The Engineers' Guild, and The Engineers Council for You-Name-It. Several of these organizations will seek the junior engineer as a member, and some of them solicit membership quite vigorously. The budding engineer is likely to become confused when faced with such an overlapping hodgepodge of engineering organizations. To give the students some background to meet this situation, a short history of the engineering profession is given followed by a detailed discussion of the functional plan.

As a prelude to a discussion of ethics the student must understand the criteria for a profession. A student should have a set of principles that he can apply to all vocations to determine which ones have professional status. I like the criteria in the 1945 report of the ECPD Committee on Professional Development, quoted in part by William F. Ryan, P. E., in the July, 1950, *Journal of Engineering Education*. Five criteria are given for a profession and four listed for professional practitioners. These nine points are the basis for an hour lecture and the reference cited is recommended reading for any engineer who hems and haws when he is called upon to discuss the professional status of engineering.

Registration for the purpose of safeguarding life, health and property is certainly one of the criteria for the professional status of engineering, architecture, law and medicine. The first step for an individual who desires to identify himself with the engineering profession is to become registered.

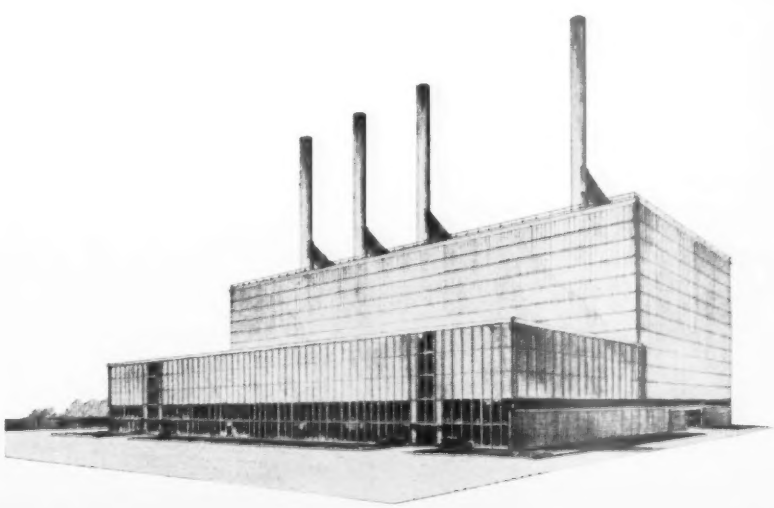
THE Foreword of the Canons of Ethics for Engineers is an appropriate beginning for a discussion of the obligations of a professional engineer. "The engineer should recognize . . . [The Canons] . . . as a set of dynamic principles guiding his conduct and way of life." The above sets the mood for the young engineer to use the Canons as moral boundaries for his business affairs with his employer and colleagues. Passages such as: "It is his duty to interest himself in public welfare . . ." are given specific meaning when it is pointed out that young engineers find public service opportunities with the Boy Scouts, the PTA, and other civic and youth organizations. As he develops technically he is obliged as a professional engineer to serve his city, county, state and National governments on committees, boards, councils or commissions where he can "apply his special knowledge for the benefit of mankind."

We have one hour entitled "The Other Professions." This is indeed too short a time to discuss medicine, law, architecture and the ministry, but the professional engineer should have a cursory knowledge of educational standards, minimum requirements for registration, and the framework of professional and technical organizations of each of these professions.

Students often have no family or other off campus background with engineers and their employment. It is especially for these students that some time is spent on a panorama of engineering involving the following: The increase in the number of engineers in research, development and administration; the growth of government in the field of engineering; salary surveys by EJC and NSPE; a brief history of engineering; and the status of engineering unions.

"The First 5 Years," published by ECPD, is an insert in one of the texts for the course, *A Professional Guide for Junior Engineers*, published by ECPD in 1939. The material outlines career orientation, continuing education, professional identification, responsible citizenship, selected reading, and personal appraisal and forms the basis for two periods on professional development.

Most of the initiative and inspiration for professional development must come from the junior engineer himself. It is pointed out to the student, however, that while



Mechanical engineering students will evaluate performance of modern steam generators and auxiliaries as a part of a laboratory course in Purdue University's new power plant. Contracts totaling $5.2 million were recently signed for the first phase of the project. Plant start-up is scheduled for the summer of 1961.

Effective counselling is a vital matter to seniors. Professor Clark, personnel representative for the School of Mechanical Engineering at Purdue, discusses with John Lugar his permanent personnel record.

he may zealously pursue a vigorous plan for professional development, it is going to be an uphill struggle if his employer does not provide a favorable climate for such development. This message apparently registers with most of the students, for company recruiters tell me that our young men often ask quite pointed questions about company attitudes and policies.

The "Criteria for Professional Employment of Engineers" is distributed to the students. Most of them read it and some study it closely. From the answers some of the students tell me they receive to some of their searching questions, it is apparent that some of the interviewers ought to read the Criteria. Management people an echelon above the recruiters might do likewise, for I believe that this would provide the answers to why a young man they considered a good prospect failed to respond to their offer of employment.

In discussing professional development I use the case method and quote extensively from articles in the AMERICAN ENGINEER on the professional development programs of some companies. Care is taken to point out to the student that the object is not to sell employment in these companies, but that the references are used for illustrative purposes of what is and can be done. The Professional Development Award by NSPE and the criteria to be used by the committee in evaluating the award nominations by the state societies of professional engineers are thoroughly discussed. These are thought-provoking ideas for these young men in evaluating the professional climate of the companies they are considering for their employment.

THE second mile is treated with some minor differences in two of the texts used in this course, the ECPD *Professional Guide* mentioned above and *Business, Legal and Ethical Phases of Engineering* by Canfield and Bowman, McGraw-Hill, 1954. One semester students were required to write an essay about the differences in the two treatments of the second mile. A student told me that the time he spent studying for that assignment and the meditation that resulted was the greatest thing that had happened to him in his college career.

"The Unwritten Laws of Engineering" by W. J. King, which is reprinted in the Canfield-Bowman text, is an assignment for class discussion. A lecture on success flows smoothly from the material on professional development for any budding engineer aspires to be a success, although he often has not crystallized his thoughts as to just what this means. I use various passages from numerous books and magazines to form the basis for a discussion on success.

While every young engineer aspires to be a success we should face the fact that not enough of them are likely to work at being successful. We all know people who are almost a success, who almost get promoted and who almost get their work done on time. Some individuals take the attitude that their raises should be automatic and that their success can be assured by watching the hands of the clock from eight to five.

It is my hope to spark into professional careers some of our young men who might otherwise never get out of second gear. Some young men are likely to work for years below their potential. Sections of this course may inspire a lackadaisical student to greater achievement.

The above is a summary of Purdue University's course in professional concepts for mechanical engineering seniors. The course works well for us; other institutions might find variations would better suit their needs. In any event I recommend a similar course for each engineering department in every college in the country. I am a firm believer in the philosophy that "only a second rate engineering college stops at teaching technical competency."—**End.**

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## About the Author . . .

Prof. Morse

Frederick B. Morse, P. E., graduated from Oregon State College in 1942. During World War II he served overseas for three years and rose to the rank of Major in the Corps of Engineers. He was graduated from the Command and General Staff College, Ft. Leavenworth, Kansas.

Morse joined the faculty of Purdue University in 1946 and is now a professor of Mechanical Engineering. He has served as a consultant to the Indiana Department of Health, the State Budget Director, and to numerous architectural and engineering firms in Indiana. He has written several technical articles, is co-author of two books, as well as being a member of three national engineering technical societies and four national engineering honor societies.

Engineer Morse has served on many chapter committees and was president of the Lafayette Chapter of the Indiana SPE. His service to the Indiana SPE has included chairman of the Legislative Committee, vice president, president, and national director.

## *Missouri PR Poll Shows Program's Value and Areas in Need of Concentration*

MORE professional engineers in Missouri work in religious and professional society affairs than in any other public relations field. Fewer offer leadership in political and cultural affairs than they do in any other field. These facts are revealed in a Missouri public relations survey which was recently conducted among its membership by the Missouri SPE"

The above statement is a first paragraph quote from an AMERICAN ENGINEER article concerning a public relations survey made in 1953 by The Public Relations Committee of MSPE. History has again repeated itself in that this same statement still holds for the May, 1960, follow-up public relations survey of the Missouri Society just recently completed.

The Public Relations Committee of the Missouri group reports that a total of 584 members returned their survey forms. This constitutes about 22 per cent of the Missouri membership which now stands at 2700. In 1953 the total returns were 473 which represented about one third of the then total of 1567 members. Both the 1953 and the 1960 surveys were conducted by mail using the same type of survey format. Member response in each instance furnished a representative cross-section of Missouri organization activities since a substantial number of returns were received from each of Missouri's twelve chapters.

The purpose of the survey was considered thoroughly before it was inauguarated September 1, 1953. The Missouri SPE board of directors believed it to be a reliable measuring device for determining how professional engineers fit into their communities as civic and public leaders. They passed to the Public Relations Committee the responsibility of proceeding with this project.

As one Missouri board member put it in 1953, "The day has come when professional engineers must do more than merely make a living. They must accept community responsibility and work with other leaders to make their home towns and cities better places in which to live and rear families. This survey will help us establish a bench mark and after several years have passed we will take another survey of ourselves and determine if we are moving forward or backward in our communities." From this premise the 1960 follow-up public relations survey was launched.

The Missouri survey covers eleven different classes of public relations: governmental, political, cultural, benevolent, religious, youth, educational, promotional, service, professional and fraternal. Each of these eleven general classifications were divided into from three to eleven subdivisions to give a more detailed result.

The final compilation of 1960 data shows that of the 584 returns, 384 professional engineers work in religious affairs in their communities. To make religion the foremost public work, 224 engineers are church officers, 91 are Sunday school officers and 69 are religious teachers.

It is notable that youth work, which ranked fourth in 1953, advanced to third place standing in the 1960 totals, while education, ninth in 1953 climbed to sixth position according to the 1960 poll. Of significance also is that service club activities advanced from seventh to fifth position standing while the totals accruing to the professional category, a high second placer in both surveys, remained substantially at the same level. Summation of all returns for the eleven categories total 1521, an average of 2.6 public relations activities per member returning the survey.

Least popular among Missouri's professional engineers as a way to serve the public are: Infantile Paralysis officer, election commissioner and police commissioner.

The premise of both surveys was based on actual leadership extended. This was construed to mean officers, board members, teachers and so forth. Mere membership in organizations and committees did not constitute a basis for leadership in the Missouri study.

The ten most popular fields for leadership in the 1960 survey are: Church officer or board member, society or chapter board member, registered boy scouter, society or chapter officer, Sunday school officer, service club board member, church school teacher, fraternal organization officer, chamber of commerce board member, and service club officer.

The ten least popular fields are: Study club officer or director, airport commissioner, street commissioner, fair or livestock show board member, Conservation Federation Board member, City Recreation Council member, Heart Association officer, Infantile Paralysis of-

*(Continued on page 52)*

*AMERICAN ENGINEER presents the second in a series of articles which are intended to inform the membership of the many activities and responsibilities of . . .*

# NSPE'S VICE PRESIDENTS

## Vice President Brandon H. Backlund, P. E., Reports on the

## PROFESSIONAL EMPLOYMENT GROUP

IN FURTHERING the service of the National Society of Professional Engineers to its members, to the entire engineering profession, and to the general public, it was inevitable that the Professional Employment Group of working units be created. Fulfilling the need for continuous attention to the problems and planning needs peculiar to individual professional engineers in the various fields of employment is a logical extension of the committee structure of NSPE.

There has occurred a progression of response to the need for attention to these matters through subcommittees, task forces, committees and functional sections. These latter working units came into being as our Society, through it officers and directors, faced a growing awareness of the preference for forums representing each area of employment, working out their plans and problems within the framework of NSPE, to the fragmentation and formation of splinter groups. Throughout the years we have seen such separate entities come into being, flourish briefly in the discussion and attempted solution of the particular problem which gave rise to their existence, then dwindle away into the mist of the dead past with the long list of defunct organizations. For the most part these groups have been based on selfish interests, often in conflict with the best interests of the engineering profession as a whole.

Much work of the Professional Employment Group centers around improving the status of employed engineers through functional sections of the various groups of engineers.

In a society where the majority opinion dominates, such minority interests cannot produce effective action. Contrariwise, the Professional Employment Functional Sections and Committees of NSPE operate in the best interests of the entire engineering family, as approved by the Board of Directors, representing the total cross section of employment. Interprofessional relations between these employment groupings are facilitated by joint consideration of pertinent problems, and resolution by solutions which are acceptable to all segments of the profession, and as a result, in the best interests of the public health, safety and welfare.

In this area of activity it is most apparent that effective action must spring from organization at the local and state levels. We have seen inspiring examples of accomplishment at the local and, more particularly, the state level of our Society. On the other hand, we have far to go in the implementation of this proven principle. Too many of our state societies and chapters have done nothing about forming and activating professional employment functional sections or committees. The best examples we can point to are those state societies and chapters which have organized and accomplished programs in these areas. Your national directors can tell you first hand of the reports on these significant advances. The stimulus for organization and action must come from the individual members. If *you* want to better the situation, attend, participate, and make yourself heard. Anyone who can tell of the results of organization and action from his own experience can sell you on its desirability.

It is inexcusable in this age of mushrooming importance of the engineer, the scientist, and the technologist, to fail to exert the best efforts of which we are capable for the advancement of the public welfare. These efforts must include a cognizance of the social, ethical, economic, and moral impact of our service to society. It is difficult to assess the relative importance of service given by the various areas of activity engaged in by the working units of NSPE. There can be no question but what the professional employment group has contributed much and can do much more as the realization of its worth results in the expenditure of joint effort at all levels of our Society.—**End**

## Vice President Benjamin G. Elliott, P. E., Reports on the

# PROFESSIONAL DEVELOPMENT GROUP

THE ACTIVITIES and responsibilities of an area vice president of the National Society of Professional Engineers are numerous and varied. In addition to serving on the Executive Committee of the Society, on which he represents the chapters and state socities in his area, the vice president is assigned to work with and accelerate the activities of the committees in a particular departmental area of Society interest.

The Central Area of the Society includes the chapters and state societies in Illinois, Indiana, Kentucky, Michigan, Ohio, West Virgina and Wisconsin. For 1960-61, the Central Area vice president has been assigned the committees in the Professional Development Group—education, engineering preparation, registration, scholarship, student professional development and young engineers. The general objectives of these committees "include all phases of individual development from the point of encouraging young people to take an active interest in selecting an engineering career, through secondary and college education, through EIT and PE registration, to their well developed and integrated status in the profession."

Kenneth Dorish, aeronautical engineering student at Pitt, works with the low speed tunnel. Much of the young engineers program is directed as similar college students.

The duty of the vice president in connection with those committees is to keep in close touch with their activities, to propose and suggest new programs for consideration, to work with committee chairmen on the budget requirements, to assist committee chairmen and members in any way possible and to keep the Executive Committee fully informed about committee projects and progress.

The current activities of the committees in the Professional Development Group follow.

***Education***—The Education Committee, under the chairmanship of Professor W. H. Parks, P.E., of the University of Denver, is at the present time initiating a survey of colleges of engineering in an effort to determine just what the schools are doing to inculcate the coming generation of engineers with a sense of engineering professionalism in the face of a rising emphasis on science. The results of this survey will be of great interest and value to everyone who is concerned with the professional concepts and attitudes of our engineering graduates.

***Engineering Preparation***—Professor Anatole Gruehr, P.E., of the Brooklyn Polytechnic Institute is chairman of this committee which is primarily interested in "improving the quality and professional caliber of scientists and engineers needed for defense and the peaceful development of our country by programs to provide motivation, stimulation and direction to young people in grade and high schools. Specific areas of interest are aimed to make the position of mathematics and science teachers on the grade and high school levels more dignified and remunerative, to improve the effectiveness of teaching at these levels and to pave the way by which our youth can receive adequate instruction in mathematics and science on the precollege levels." It is recognized that the programs proposed by the committee must be implemented at the local level by chapter committees in the various states. The chapters have been sent copies of the proposed programs and suggestions for implementing them.

A current objective of the committee was met at the recent meeting in Des Moines when the Board of Directors endorsed the Junior Engineering and Science Summer Institutes, an activity which the committee recommended.

***Registration***—This important committee of the Society under the chairmanship of Robert Williamson, P.E., of Charleston, West Virginia, is engaged in a continuing study of the registration laws in the United States and possessions for the purpose of recommending improvements. The committee is also engaged in a program to encourage and stimulate registration.

Recently, the committee has had under consideration the revised Model Law approved by the National Council of State Boards of Engineering Examiners at its Portland, Oregon, meeting in August, 1960. The NSPE Board, at the Denver meeting in October, 1960, endorsed Part I of this Model Law but did not endorse Part II pertaining to the registration of land surveyors. This part of the law is being given further consideration by the committee.

***Scholarship***—The function of the Scholarship Committee of which Professor Leland Hobson, P.E., of Kansas State University, is chairman, is to develop a program for, and encourage the establishment of scholarship awards to enable young persons of outstanding abil-

*(Continued on page 49)*

# New Literature

**RADIATION FACILITIES**—This new, illustrated eight-page brochure from Radiation Dynamics, Inc. presents for the first time a comprehensive exposition on the design and manufacture of RDI's unique and economical Dynamitron high voltage accelerator. RDI's new brochure also pictures and describes its Radiation Service Center, as well as RDI's facilities for research and development. The capabilities of Radiation Dynamics in the areas of basic research in such fields as ion propulsion, plasma physics, radiation sensitizers and neutron activation are outlined. This brochure also features application of the Dynamitron Accelerator ranging from space environmental studies to a broad variety of industrial radiation uses.

*(Circle 15 in Readers' Service Dept.)*

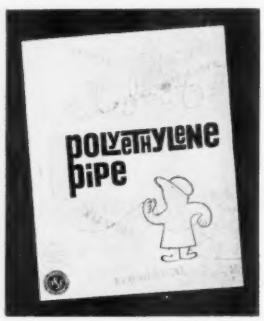
**PSYCHROMETRIC CHART – A** new Psychrometric chart, designed for greater utility and accuracy in the selection of air-conditioning systems and equipment, has been developed by the Trane Company. The chart is self-contained and provides information needed to solve almost all air-conditioning problems without reference to auxiliary material. Some of the chart's advantages are: It is based on the latest psychrometric data published by the American Society of Heating, Refrigeration and Air Conditioning Engineers; plotting may be done with any straightedge; greater accuracy in calculation, plotting and printing has reduced error to less than one per cent; constant relative humidity lines are included instead of percentage humidity which has become relatively obsolete in modern air-conditioning engineering calculations; the use of horizontal humidity ratio lines, and the addition of a vapor pressure scale, increases the chart's value in moisture calculations; three-color printing makes the chart easier to read; it can be reproduced on most commonly used office copy machines.

*(Circle 16 in Readers' Service Dept.)*

**MIL-SPEC CATALOG**—The Bray Oil Company announces the release of the latest issue of it's Mil-Spec Catalog. The list carries references on over 450 specifications and has been found indispensable by many users of specification products in the fields of lubrication, hydraulics, corrosion prevention and similar specialized areas. In addition to the numerous references for current specifications, the list gives the military specification equivalent for approximately 300 Aero-nautical (AN), Air Force, Army, Navy, SAE and Aerospace manufactures specifications. Also available, by special request, is a list of ninety NATO symbols and the equivalent U. S. Specifications.

*(Circle 17 in Readers' Service Dept.)*

**POLYETHYLENE PIPE**—This straightforward discussion of polyethylene pipe should help clear up for




the contractor the confused picture of quality, type, density and proper application of a useful and economical product. *All About Polyethylene Pipe,* from Union Carbide Plastics Company, includes advantages of using polyethylene pipe in a number of situations, a discussion of its various properties, the commercial standards met in its manufacture, procedure of installation and a list of suggested uses.

*(Circle 18 in Readers' Service Dept.)*

**INDUSTRIAL PUMPS** – Complete up-to-date engineering information is now available on Roth Regenerative Turbine pumps designed for the industrial field. This information covers a factual comparison and discussion of the differences of the Roth regenerative centrifugal turbine as opposed to the conventional centrifugal pump and gives complete selection, performance and mechanical data plus installation dimensions on three new improved end-mounted industrial pump designs. Included are three basic construction variations; comparisons between end-mounted and center-mounted pumps; and their NPSH characteristics. Under "Construction Data" a choice of five mechanical seals suitable for varied industrial applications are shown with their pressure limitations at various temperatures. Streamlined selection tables and specification forms save time and insure accuracy in locating, specifying and ordering the right pump for the job.

*(Circle 19 in Readers' Service Dept.)*

**SAWS AND TOOLS**—With the ever increasing use of Carbide Tipped Saw Blades and Tools, Victory Carbide Saw and Tool Company has just made available a book that combines the utility of a catalog and the function of a reference handbook. The book lists all of the standard blades such as the rip, cross-cut, thin-rim and hollow ground. In addition such exclusive Victory Blades as the M-20 Metal Cutting Blade, the BT-45 All Purpose, 3 and 1 Trim and the PC Penta-Cut Blades are also shown. Each blade is represented by accurate drawings of top, face and side tooth design with every possible specification given. In all are 14 different types of blades. The blade selector shows what blade to use for every type of material and cutting condition. The nomenclature names all parts of the blades so that confusion is eliminated—you know how to identify a right and left hand blade and how to protect carbide tipped tools and blades in production.

*(Circle 20 in Readers' Service Dept.)*

**KOEHRING MAILERS**—The Koehring Company has recently issued two mailers which emphasize phases of

their production. One entitled "Pave Your Way to Concrete Profits," illustrates and describes how the Tribatch concrete paver increases production over other two-compartment pavers in present use. Principle design innovations such as three-compartment mixing drum, pressure injection water system and electric batchmeter are also discussed. The second, "Make More Dollars Move," describes two of Koehring's popular sized crawler crane-excavators. Through ten on-the-job photographs and appropriate descriptive copy it shows how these models perform well on pipelines, road, building and quarry work. Hoe, shovel, clam, dragline and crane front ends are also illustrated.

*(Circle 21 in Readers' Service Dept.)*

**ELECTRONIC COMMUNICATIONS**—A recent publication of Electronic Communications, Inc., outlines and explains the history of the organization and the various areas in which it sponsors research and development. Among the phases of electronics which are discussed as part of the organization's activities are systems development, data link, countermeasures, special purpose computers, electromechanical actuators, facsimile equipment, microwave and infrared R&D, space technology research, ground weapons systems research and aviation supplies.

*(Circle 22 in Readers' Service Dept.)*

**DRYERS - COOLERS - HEATERS** — Hardinge Company, Incorporated, has just published a completely revised, 24-page catalog on Ruggles-Coles Dryers, Heaters and Coolers, No. 16-E. The catalog includes new material on fundamentals of drying, selection of proper drying equipment, and drying economics. Profusely illustrated with photographs and sketches showing distinguishing features of the Ruggles-Coles direct and indirect type dryers, water and air-cooled rotary coolers, and other Ruggles-Coles rotary equipment.

*(Circle 23 in Readers' Service Dept.)*

**SPEED DRIVE LINE**—6-page Bulletin 2900 outlines an extensive line of Adjustable Speed Drives from The Louis Allis Co. for application in the ¾ to 2500 HP drive range. The Bulletin describes four types of complete packaged adjustable speed drives and gives details on available ratings, speed ranges, type enclosures, associated controls and many standard and special modifications. The complete line includes: "Adjusto-Spede" AC drives, for stepless accurately controlled adjustable speed over a 17:1 speed range in ratings from 1 to 100 HP, with larger ratings available in liquid-cooled types called "Magnetic Drives" featuring an 8 to 1 speed range in ratings up to 2500 HP; "Select-A-Spede" DC drives for adjustable speed performance over an 8 to 1 range and greater in ratings from ¾ to 400 HP; "Allispede" drives, an AC motor driven mechanical adjustable speed drive (disc and belt) for speed ranges of 8 to 1 in ratings from 1 to 20 HP.

*(Circle 24 in Readers' Service Dept.)*

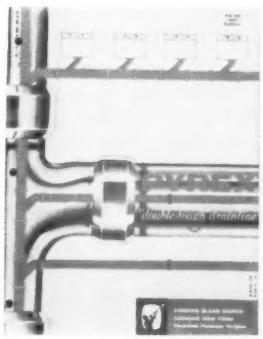
**DIGGING AND HAULING**—A new Sauerman Catalog shows how deep digging Slackline Cableways are used to recover sand and gravel deposits; clean river channels and settling ponds; excavate and haul bulk materials. A table included in the booklet shows capacities of each size machine at varying haul distances. Components of the Slackline are described in detail. Pictures and drawings cover a variety of installations.

*(Circle 25 in Readers' Service Dept.)*

**IDEA BOOK**—An idea book picturing many ingenious gage modifications of interest to inspection engineers is available on request from Boice Gages, Inc., manufacturers of high precision, dial indicator gages and gage-setting devices. The 84-page booklet, entitled "Ideas" shows how standard Boice components can be incorporated in special and unusual gaging assemblies. Simple solutions to many common gaging problems are shown. Illustrations throughout the booklet show special parts of the assemblies shaded, while stock components are shown without shading, for easy differentiation. According to "Ideas," adapting standard components to fit into special gage assemblies saves both time and cost, and assures availability of replacement parts from stock.

*(Circle 26 in Readers' Service Dept.)*

**PYREX DRAINLINE**—A revised and expanded 16-page catalog which gives detailed information on the Pyrex




brand "double-tough" drainline has been published by Corning Glass Works. The illustrated brochure contains product and property data and lists advantages of the corrosion-resistant glass system for disposal of chemical wastes. The catalog contains full details on available fittings. Photographs, schematic drawings and charts are included with a sample specification sheet. The bulletin PE-30, is available on request.

*(Circle 27 in Readers' Service Dept.)*

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***These listings are informational only and are not an endorsement of the products, nor of the manufacturer's claims. To receive any of the new literature described in these columns, merely circle the item number in the Readers' Service Dept. and mail to AMERICAN ENGINEER.***

# 1961 Engineers' Week Proved Achievement in PR

The eleventh consecutive National Engineers' Week under the general sponsorship of NSPE has come and gone, and the several thousand newspaper clippings received at the National Society headquarters office in Washington indicate the magnitude of the annual observance in terms of an achievement in public relations.

Chapter and state level events for the 1961 Week included career sessions for high school students, poster and essay contest awards, scholarships, film showings, speaking programs for civic and educational groups, radio and TV programs on engineering as a career, store window and lobby exhibits, guided tours through plants and research labs, open house days at engineering schools, and the signing of numerous proclamations for the Week by mayors and governors.

A message from President John F. Kennedy on the 1961 observance was received at the National Society headquarters on February 17 (AE, March, p. 6). The late arrival date of the message prevented reproduction and distribution until the eve of the Week.

In Tucson, Arizona, John H. Stufflebean, chief engineer for Blanton & Cole, and a vice president of the National Society, was named engineer of the year for that city. The Savannah Chapter of the Georgia SPE, among a variety of other activities, had five high school youths given certificates from the mayor for their accomplishments as outstanding students interested in engineering as a career. The youths were also given a two-day expense-paid visit to the campus of Georgia Tech.

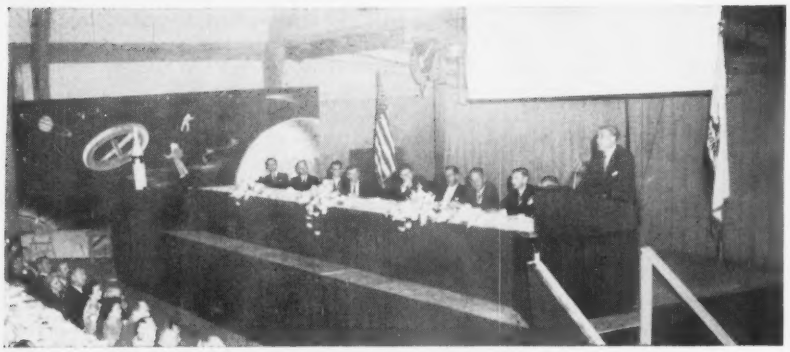
The Bergen County Chapter of the New Jersey SPE contacted 42 high schools, first by letter then by telephone, to line up speaking engagements for local engineers. Most of the schools requested literature on engineering as a career, and indicated an interest in using chapter services at a later date.

More than 1600 Lane Technical High School students in Chicago attended a career conference sponsored by the Chicago Chapter of the Illinois SPE. An essay contest for Lane students, and a TV appearance were other highlights of the Chicago area program. "Is Engineering the Career for Me?" was the title of a TV panel discussion in Hartford, Conn.

Some 800 engineers attended the 1961 Engineers' Week banquet in Wilmington, Delaware. This is believed to be the largest group of engineers ever gathered in one place in that state. Out in California, members of the Santa Clara Engineering Council heard an address by Wernher von Braun. An Engineering Achievement Exhibition was held in the Santa Clara

New Jersey's Governor Robert B. Meyner signs Engineers' Week proclamation as New Jersey SPE officials look on. Seated, left to right, are Frank Manning, president, Jersey City; Gov. Meyner; Charles Bonhag, 1st v. p., Glen Rock. Standing, Anthony Del Mastro, 2nd v. p., Nixon; Vincent Wagner, sec.-treas., Trenton; Warren Stadden, nat'l. chmn. of the 1961 Week; and Charles Dodge, exec. dir., Trenton.

Mayor Alfred R. Pierce, of Camden, N.J., signs a proclamation making the 1961 observance official in that city. Left to right are William T. Harker, president of the Professional Engineering Society of Southern New Jersey, Mayor Pierce, and Henry W. Phillips, of Moorestown, manager of BMEWS Operations Administration of RCA, and a trustee of the Society.



Above, Dr. Wernher von Braun, rocket pioneer and head of the Huntsville, Alabama, rocket and missile building facility, speaks at the Engineers' Week banquet in San Jose, California. Dr. von Braun stressed the importance of space projects in building up our technological strength. Lower, part of the San Jose banquet audience in the Santa Clara Fairgrounds Exposition Hall. The affair was under the joint sponsorship of the Santa Clara Valley Engineers' Council, Lockheed Management Association, Engineering and Research Section, and the Santa Clara Valley and Peninsula Chapters of the California Society of Professional Engineers.

Fairgrounds Exposition Hall.

Butler High School students in Huntsville, Alabama, heard a panel discussion on how engineers are utilized in missile operations. A talk on the Soviet air force was presented by Lt. Col. Clarence R. Glasebrook at a dinner meeting sponsored by the Northwest Chapter of the Georgia SPE. A robot-like contraption with a human look and made up of an assembly of automatic electrical controls was fabricated by Crouse-Hinds Products Company for display in the Houston Club lobby, Houston, Texas. Forty-two P.E.'s from Sheboygan County, Wisconsin, visited the Kohler Company for a tour of the firm's new engine and electric plant building. In New Haven, Connecticut, eight young women were selected by area schools to attend Engineering Career Day, held at the University of Bridgeport.

A TV program series on engineering as a career was a project of the Alabama SPE. In Portland, Oregon, store windows featured a number of displays including a model atomic plant and assorted electronic devices. The Colorado River Storage Project was the topic of a talk by Rex Tynes, of the New Mexico Public Service Company, at a Lions Club meeting in

Auburn University faculty members discuss final plans for a series on Alabama educational TV channels. L. to R. are Dr. Karl Brenkert, Jr., ass't. dean, School of Engineering; Fred H. Pumphrey, dean, School of Engineering; Charles M. Stokes, associate professor of agricultural engineering; Dr. R. G. Sturm, of Sturm and Krouse Consultants; and Dr. Melville S. Priest, head professor of civil engineering.

Connecticut's Governor Dempsey, right, gets a close-up view of a slide rule before he signs statement for Engineers' Week in that State. Connecticut SPE officers, left to right, are Milton R. Case, Bloomfield, public relations director; Robert A. Lapuk, co-chairman, Engineers' Week; and Stefan L. Grapnel, Putnam, president.

Upper left, Governor Albert D. Rosellini of Washington hands a signed proclamation for the Week to Colonel Paul H. Symbol, president of the Washington SPE. Seated at left is John R. Wallace, national director of the WSPE. Standing, left to right, are Laurence C. Mathews, president of the Yakima Chapter, and William D. Whinery, Jr., president of the Tacoma Chapter. Below, left, is Nassau County Executive A. Holly Patterson flanked by Nassau County Chapter officers, left to right, Henry J. Campbell, Jr., president; John D. Murray, director of public relations; Clyde M. Alston, vice president; and Donald Bass, treasurer. Below, an Engineers' Week display at the National Guard Armory in Tullahoma, Tennessee.

Second photo from bottom, left, the Mayor of Newark, N.J., puts his signature on a proclamation under the eyes of Professor James R. Robbins, left, president of the Essex County Chapter, and George Andress, director of public works in Newark. Directly above, a Consolidated Edison display at White Plains, N.Y.

Lower left, Governor Price Daniel, of Texas, makes the Week official in that state. Standing, left to right, are Kenneth M. Smith, president of the Texas SPE; James C. Stewart, Jr., new TSPE executive secretary; and K. K. Moore, president of the Travis Chapter.

Albuquerque, New Mexico. An open house was held by the William Rayen School of Engineering of Youngstown University.

The complexities of hypersonic rocket plane research aimed toward a manned space flight were among the topics covered by speakers at the annual banquet of the Minot Chapter of the North Dakota SPE. In Amarillo, Texas, the wives of members of the Panhandle Chapter of the Texas SPE decorated a window display on engineering in a downtown department store.

Senior science and mathematics students from Kingston High School, Kingston, New York, visited the IBM Federal Systems Division Command Control Center and had a look at SAGE computer components. The Kingston city library was one of many throughout the country featuring displays of books on engineering as a career during the Week. An exhibit depicting highways through the years in Illinois was displayed at Griffin High School in Springfield, Illinois. Displays on the kind of engineering work done in the Vicksburg, Mississippi, area were seen in a number of downtown locations in that city.

Five Saratoga County, New York, high school science students received one-year subscriptions to *Scientific American* by General Electric's general engineering laboratory. The Allentown Works of Western Electric Company was the host to a group of local high school students. Engineers from Armstrong County, Pennsylvania, talked with students at Redbank Valley High School. In Warren, Pennsylvania, the Warren Engineering Council cooperated with local science teachers in planning the County Science Fair during Engineers' Week.

► ***Editor's Note:*** **Space limitations in the AMERICAN ENGINEER make it impossible to include mention of the several hundred Engineers' Week programs which have been reported to the NSPE headquarters. A display of the newspaper clippings obtained during the 1961 Week will be set up at the National Society's Annual Meeting in Seattle, Washington, July 4-7.**

Above, Mayor Malcolm Maclean, of Savannah, Georgia, prepares to sign a proclamation for the Week in the presence of chairman of the Engineers' Week committees active during the 1961 observance. Otto H. Fritzsche, left, New Jersey State Highway engineer, receives an award as Engineer of the Year from Norman H. Sollenberger, chairman of the Princeton University engineering department. Datus E. Proper, left, vice president and general manager of the Pearl Brewing Company, receives an award as Engineer of the Year from the Bexar Chapter of the Texas SPE. Wayne C. Morgan, chapter president, presents the award. Delaware's Governor Carvel signs a king-size Engineers' Week proclamation. Looking on are five representatives of the Delaware Council of Engineering Societies.

## *Election Totals Released By Tellers Committee*

NSPE members have elected Murray A. Wilson of Salina, Kansas, as the 1961-62 Society president with a total of 12,616 votes, according to the official tabulations of the Tellers Committee which met March 25 at the National headquarters.

Also elected in the annual balloting were W. Earl Christian of New Brunswick, New Jersey, vice president, Northeastern Area with 12,370 votes; Harvey F. Pierce of Miami, Florida, vice president, Southeastern Area with 12,317 votes; C. R. Hanes of Columbus, Ohio, vice president, Central Area with 12,360 votes; Waldo Wegner of Cedar Rapids, Iowa, vice president, North Central Area with 12,299 votes; Thomas T. Mann of Roswell, New Mexico, vice president, Southwestern Area with 12,301 votes; John H. Stufflebean of Tucson, Arizona, vice president, Western Area with 12,250 votes; and Russell B. Allen of College Park, Maryland, for his fourteenth term as treasurer with 12,462 votes.

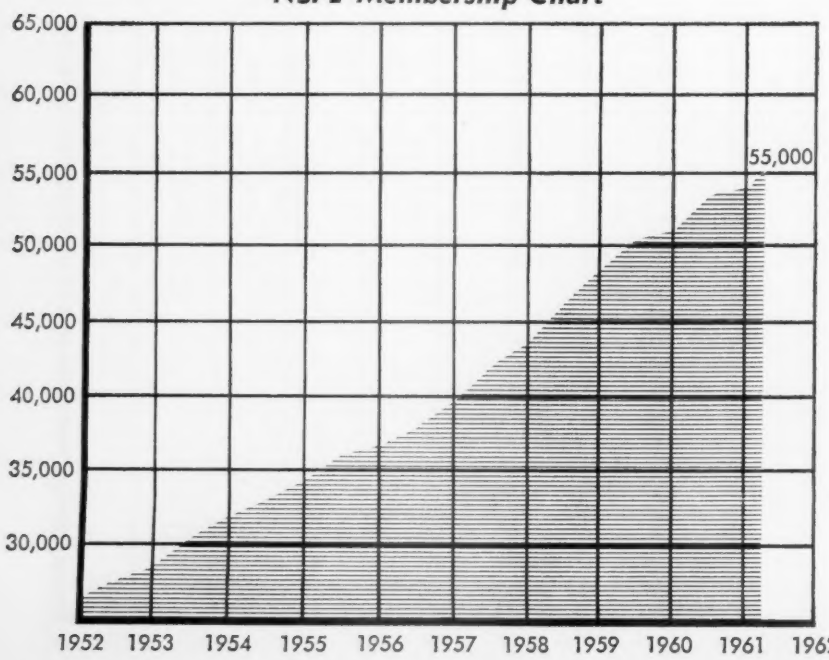
By a vote of 11,979 to 248, a constitutional amendment was accepted which would add the following paragraphs to Section 2, Article VII:

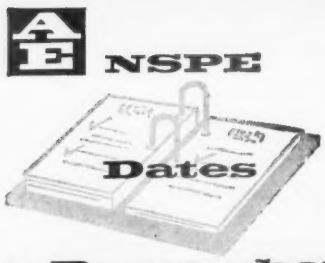
"In the event an elected member of the Nominating Committee is unable to fulfill his functions, the president shall declare the position vacant and appoint an alternate from the area concerned. Should the elected chairman be unable to fulfill his functions, the president shall declare the position vacant and appoint another of the three immediate past presidents as chairman, who shall serve without vote, and the president shall then appoint a voting alternate from the area of the elected chairman. In the event that the newly appointed chairman was a voting member of the committee at the time of his appointment as chairman, he shall retain his vote.

"Should more than one of the immediate three past presidents be elected to the Nominating Committee, the most recent past president shall be chairman.

"Additional nominations for the Nominating Committee may be made by the Board for all administrative areas except that of the proposed chairman."

### *NSPE Membership Chart*




## to Remember

**NSPE State Presidents' Conference**—April 13-15, Union Club, Memorial Center, Purdue University, West Lafayette, Indiana.

**Florida Engineering Society**—Annual Meeting, April 19-22, Angebilt and San Juan Hotels, Orlando, Florida.

**Illinois Society**—Annual Meeting, April 20-22, Pere Marquette Hotel, Peoria, Illinois.

**Kentucky Society**—Annual Meeting, April 21-22, Louisville, Kentucky.

**South Dakota Society**—Annual Meeting, May 6, Sioux Falls, South Dakota.

**New Jersey Society**—Annual Meeting, May 5-6, Ambassador Hotel, Atlantic City, New Jersey.

**Vermont Society**—Annual Meeting, May 13, Montpelier Tavern, Montpelier, Vermont.

**Pennsylvania Society**—Annual Meeting, May 18-20, Pittsburgh, Pennsylvania.

**Maryland Society**—Annual Meeting, May 19-20, Carvel Hall, Annapolis, Maryland.

**Montana Society**—Annual Meeting, May 20, Rainbow Hotel, Great Falls, Montana.

**Connecticut Society**—Annual Meeting, May 20, Hotel Taft, New Haven, Connecticut.

**Michigan Society**—Annual Meeting, May 25-27, Rackham Memorial Building, University of Michigan, Ann Arbor, Michigan.

**California Society**—Annual Meeting, May 26-27, Casa Munras Hotel, Monterey, California.

**National Society of Professional Engineers**—Annual Meeting, July 4-7, Olympic Hotel, Seattle, Washington.

**National Society of Professional Engineers**—Fall Meeting, October 19-21, Hotel Roanoke, Roanoke, Virginia.

## *Officers Nominated to Head Functional Section*

Wesley E. Gilbertson has been nominated for a third consecutive term as chairman of the NSPE Functional Section for Engineers in Government Practice. Other officers nominated by the Section's Nominating Committee for the 1961-62 administrative year are: Otto Mald, vice chairman, Northeast Area; Ernest M. Titus, vice chairman, Southeast Area; Arthur C. Kessell, vice chairman, Central Area; R. Emmit Welsh, vice chairman, North Central Area; Charles D. Curran, vice chairman, Southwest Area; W. C. Hill, vice chairman, Northwest Area; and Lt. Col. Stuart L. Davis, secretary.

# Thoughts on Professionalism...

By PAUL H. ROBBINS, P.E.
*NSPE Executive Director*

## *Training for Membership*

IT is always disturbing to have a member, particularly if he is a chapter officer or committee chairman, ask a fundamental question on a topic which has been discussed for some period of time and on which much may have been written in Society literature. Yet such questions merely emphasize again that despite the number of speeches which may be made, discussions which may be held, or articles and pamphlets which may be written, the problem of communication is a serious problem within all elements of NSPE.

COMMUNICATION, too, is a problem when one considers our membership needs, high indeed, is the number of qualified engineers who are either not yet registered or who are registered and not yet members of the Society. As the Society's membership has increased, there are those who have felt that the rate of increase of the Society should correspondingly rise. While the Society's growth has been most encouraging, the slope of the membership line has held nearly constant. For this and other reasons membership committees at all three levels of NSPE are continuously seeking means by which programs of the Society and the values of membership can be called to the attention of those not yet having joined the ranks.

THE National Membership Committee has devised a program which, it is hoped, chapters will implement in an attempt to alleviate this deficiency. The concept is not new, but its assimilation into NSPE requires the concerted effort of at least a small group in each chapter. The basic idea of the plan is to develop a membership information team who will become well versed in much of the philosophy and information available on the society as well as new developments in the profession.

THIS team would periodically schedule a full evening session with new members, preferably within the first month or two after their acceptance into the Society. Insofar as possible, perhaps the team would be willing to carry on the discussion with any older members who might wish to participate in this information session.

BASICALLY, it is expected that this will be the responsibility of the membership Committee at the chapter level, although the indoctrination team may not necessarily be composed of members of that committee. It has been suggested that this would be an excellent opportunity for service by some of the past officers of the chapter—past chapter presidents and past state directors who have kept themselves informed on the latest Society developments.

THE end result of such a program is self-evident. Not only will all members be better informed on the Society's activities, but they will also be better able to answer the questions of prospective members whom they may contact. In addition, a better informed membership generally will result in more fruitful activity by all committees and chapter meetings.

By Mrs. Clark A. Dunn, Chairman, Ladies Auxiliary Advisory Committee.

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**Reports of observance of Engineers'** Week have come in from over the country. In some cases the ladies were entertained by their husbands and in others the auxiliaries did the entertaining.

**At Youngstown, Ohio, the Auxiliary** to the Mahoney Valley Society of Professional Engineers entertained at a buffet supper during Engineers' Week. It was followed by square dancing.

**It was the writer's privilege to** meet several ladies from the Panhandle Chapter Auxiliary of TSPE while on a recent trip to Amarillo, Texas. The auxiliary to that chapter honored their husbands' profession during Engineers' Week by arranging an attractive window display in a downtown store. It featured a city skyline background, a model home, an Atlas rocket and other engineering projects.

**The P.E. Auxiliary of Weirton,** W. Va., is a very active group with an interesting program planned for each monthly meeting. An outstanding program was enjoyed in January when the group heard a talk on "Psychology of Marriage" by Dr. John R. Korzi, head of the Education Department of the College of Steubenville, Steubenville, Ohio. In February, the program was on "Cosmotology" and in March they heard a discussion of wills. In April they will enjoy a play or show.

**The newly organized Tacoma,** Washington, Chapter Auxilary has shown remarkable growth since they organized last summer. At

## "Bring in one for SIXTY-ONE"

**"A man must stand erect—Not be kept erect by others." Marcus Aurelius**

**What have you done about getting a new member?**

their first meeting the attendance was twelve. Now it has reached 44 with a potential of 70 names.

**The Hutchinson, Kansas, Engineers'** Wives Club reports a small but very enthusiastic group. They have a membership of twenty and an attendance of twelve to eighteen at monthly meetings. The programs are diversified, some educational and others strictly entertaining. They have contributed to their Junior College Engineers' Club toward the purchase of library material.

**The ladies who attended the** NSPE winter meeting in Des Moines, Iowa, in February were pleasantly entertained by the wives of the Iowa Engineering Society members. Highlights were a tour of Stafford House, an English castle which has been reconstructed in Des Moines, and a travelogue by Henry and Vera Bradshaw, world travelers and writers.

## MIT

*(Continued from page 32)*

**E. J. Hanley, president of Allegheny Ludlum Steel Corporation, graduated from MIT in 1924. He has been with Allegheny Ludlum since it was formed by merger in 1936. Prior to that time, he was with General Electric Company for ten years. His extremely successful business career underlines the value of his remarks regarding MIT:**

IT IS recorded that Aristotle was asked how much educated men were superior to those uneducated. 'As much,' said he, 'as the living are to the dead.'

"Science and technology have greatly changed man's physical environment in the intervening centuries and the changes have served to make Aristotle's words even truer today than on the day he uttered them.

"For many years I have been impressed by the extent and value of the alumni efforts for MIT. I know of no institution which commands more constructive loyalty on the part of its alumni; I know of no institution in which alumni relationships so effectively stress its basic aims.

"Graduates of MIT have been well grounded in engineering and science and they are to be found in nearly every company in the country, doing engineering, research or administrative work. The possession of this specialized knowledge imposes on its possessor a special obligation: To use this knowledge solely for the good of others. I am confident that the use of specialized knowledge in this way has enriched the Nation and has afforded the MIT graduate opportunities for service, growth and triumph which reflect most favorably on the Institute and its faculty and administration.

"MIT's undergraduate school is of top rank and its graduate schools are unmatched. In this day, when pursuit of higher education has become as much a compulsion as a necessity, MIT attracts the finest minds that the secondary schools can produce and has maintained steadfastly its high standards for admission and graduation.

"MIT has pioneered in developing what President Stratton calls 'a University centered around science.' Further, under the enthusiastic leadership of Dean Gordon Brown, MIT is at the present involved in a project which will revolutionize engineering education. The entire engineering curriculum is being reviewed, introducing much more science into the engineering program. This project—typical of the advanced thinking that has marked MIT's 100 years—will have far reaching effects on engineering education throughout the world.

"In MIT the Nation has an institution that unquestionably merits the adjective, 'great.' I feel certain that its accomplishments of the past and present are but the first act of an unfolding drama of continuing greatness in engineering and scientific education."

**Robert C. Sprague received his**

## Expiration Dates for State Licenses

The following tabulation of expiration dates of state certificates for the practice of engineering covers those states in which the expiration dates occur during the second quarter of the year. Similar lists will be published quarterly in the AMERICAN ENGINEER for the information and convenient reference of registered engineers.

**April 30—**

Hawaii
New Jersey

**June 30—**

California
Delaware
Idaho
Kentucky
Massachusetts
Nevada
Oklahoma
Rhode Island
South Carolina
West Virginia

Michigan—Three years from date of issuance
New Mexico—Last day of registrant's birth month

**M.S. degree at Massachusetts Institute of Technology. A retired Navy officer, he now heads Sprague Electric Company in North Adams, Mass. He has been active in government as well as private business, and has written a number of articles on the electronics industry. A graduate with the class of 1924, Sprague has this to say about MIT:**

**MIT**, MORE than any other institution of higher learning in America, has contributed to the almost explosive advance in the frontiers of science and engineering which has taken place in the past quarter century. Not only has the Institute turned out all-round educated engineers and scientists in class after class, whose individual members have been probably the most eagerly sought after by industry from any educational institution in America, but its graduate students have constituted an even more concentrated resource of exceptional intellectual capability and professional competence, rigorously selected as they have been from the best that both America and the world-at-large have had to offer.

"MIT's excellence in the fields of scientific and engineering education has been complemented by its increasing emphasis on the humanities so that today's 'Tech man' is a wholly educated man and not the narrow specialist whom some of our schools are still turning out.

"Under the able leadership of James R. Killian, Jr. and Julius A. Stratton, and their predecessors, it has been ready and willing to change, adapt, and expand its programs in engineering, the sciences, the humanities, architecture, and business and economics, so that the Institute has become an acknowledged leader in every field in which it has taken an interest. MIT's recent creation of a Center for Communication Sciences, for example, is probably one of the most important advances which will affect the Nation in future years. Likewise, its pioneering in such fields as aeronautics, astronautics, solid state physics and electronics, with its myriad of allied subjects, etc., can be expected to continue so that many of the important breakthroughs of tomorrow can be expected to come from the banks of the Charles.

"MIT has been a leader in securing the support of the business and scientific community and its continuing efforts in this direction are being widely emulated by other schools. It has made many of our business leaders aware of their responsibility toward helping progress in education—and this has been no easy task.

"As the Massachusetts Institute of Technology enters its second century, I believe deeply that its accomplishments-to-be will surpass those of the past and keep it far ahead in its chosen fields."—**End**

## ELLIOTT

*(Continued from page 39)*

ity to study engineering. Prominent at present are the five Armco-NSPE civil engineering scholarships which are administered by NSPE. Of considerable interest to all NSPE members is the incorporation of the NSPE Educational Foundation, the purpose of which is to encourage the establishment of scholarships on a national or state basis and to administer the operation of the entire scholarship program. The state societies are being asked to participate in the scholarship program.

***Student Professional Development***—The important function of this committee, of which Professor J. Neils Thompson, P.E., University of Texas, is chairman, is to encourage and assist in the establishment and operation of NSPE student chapters in colleges of engineering. At the present time such chapters are in operation at the University of Texas, University of Pittsburgh, Ohio University, Antioch College, University of Toledo and the University of Dayton. Several other student chapters are in the process of organizing.

To implement the program of the committee, literature on professional development has been distributed to colleges of engineering for the purpose of developing interest in professional attitudes and concepts among engineering students and faculties. Colleges are also being urged to include instruction in professionalism in the curricula.

***Young Engineers***—Waldo Wegner, P.E., of Cedar Rapids, Iowa, is chairman of this committee, the function of which is to develop and implement a program to encourage, assist and promote the welfare of young engineers in their professional development. An important innovation of the committee is the Engineer's Record Book, designed to assist the young engineer in his professional development and a guide book for use in preparation for Young Engineers' Month during November. The effective introduction and indoctrination of young engineers into the profession is a real challenge to all NSPE members.

An important duty of the vice president is to attend and participate in the meetings of the NSPE Executive Committee. His first attendance at a meeting of this committee is at the annual meeting where he is oriented in committee activities and meets both the retiring and the new members of the committee. He is formally inducted into office at the annual meeting.

Shortly after the annual meeting, the Executive Committee meets at the Washington headquarters. At this meeting, the vice presidents are briefed on the plans for the year by the president and the executive director. They also have the opportunity to inspect the building and become acquainted with the headquarters staff. Budget matters are taken up and the vice president has the responsibility of evaluating the programs of the committees assigned to him and requesting funds to carry on the programs.

Another meeting of the Executive Committee is held at the time of the fall meeting of the Society. In 1960 this was held in Denver. At this meeting, each vice president indicates the progress of his committee activities and presents committee recommendations for approval by the Executive Committee and the Board.

The vice president has a part in presenting committee reports and recommendations to the Board. He is called upon to preside during the time the committee chair-

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men are presenting their reports and recommendations to the Board. In the absence of a committee chairman or representative, the report is presented by the vice president. As temporary presiding officer, he endeavors to bring up all pertinent matters for discussion and to insure that all Board members are fully informed relative to questions and problems involved.

The Executive Committee also meets at the time of the annual meeting which in 1961 will be in Seattle. The newly elected vice presidents as well as the current vice presidents attend this meeting.

At the meetings of the National Society the area delegates and members in attendance get together, usually at a breakfast meeting, to consider and discuss problems and proposals of interest and value, not only to chapters and state societies within the area, but also to the National Society as well. These meetings, conducted by the area vice presidents, have resulted in many valuable suggestions and ideas.

During his term of office the vice president is called upon to participate in a number of day-by-day activities. He may be asked by the president of the Society to represent NSPE at special functions. The present Central Area vice president represented the Society at the Civil Engineering Conference at the University of Michigan in June, 1960, and also the installation of the new president of the University of Minnesota in February, 1961.

Another duty of the vice president, whenever invited, is to meet with and speak before individual chapter and state society meetings as well as before nonsociety groups. Among recent meetings in which the Central Area vice president participated are those of the Wisconsin State Society, many chapters within Wisconsin, the Chicago Chapter of the Illinois Society and the engineering faculty at Marquette University. In prospect are invitations to attend the 1961 annual meetings of the Minnesota and Indiana State Societies.

The office of area vice president is not an honorary one. It is a working job requiring time, effort, talent and frequently the expenditure of some money. The office requires a thorough knowledge of the organization, operation and policies of NSPE, considerable knowledge of Society members and affairs in his area, a dedication to the objectives of NSPE and a willingness to work. To serve as area vice president is a stimulating and rewarding experience.—**End.**

## YOUTH CORPS

*(Continued from page 25)*

Speaking to this point, International Cooperation Administration's Glenn McClelland has some pertinent points to make. McClelland has served overseas extensively himself and managed much of the preliminary work in setting up the Corps as it now exists. He comments: "We need people with a great deal of sensitivity, people who can accept and adapt themselves to local ways of life. Extreme patience, a sense of humility and respect for local customs, religions and goals are all part of this. We need people who can do the work of a GS-1 or a GS-17—in the first case without resentment, and in the second without falling to pieces. We don't need experts as much as we need open minds, and adjustability of attitude. As a result, we mustn't make this program into a bandwagon, because if we do, we will defeat our own purpose."

In more practical terms, this means that many of the Corps will be working in nations such as India, where rigid social stratifications have existed for centuries. To fly into the face of these would be foolish, if not disastrous. Further, the Corps member must realize that illiteracy is not equivalent to ignorance. Knowledge inherited by word-of-mouth in many civilizations is perhaps more sophisticated than much of what can be obtained by reading. In making changes and improvements the Corps member should be willing to forego personal credit, for lasting effects are much more likely if the local people regard the idea or improvement as their own.

In this area responsible opinion is unanimous. Second-rate Corps members will yield a second-rate program, and in a program of this type the Nation simply cannot afford a second-rate job. Comments Representative Reuss, "We simply can't afford any addlepates. Matu-

rity is an important consideration." Long before the program had captured the national limelight and admiration, Reuss described it this way: "A Point Four Selective Service for young Americans, neither busybodies nor misfits, with some degree of expertness and a willingness to serve for a few years in far off places at a soldier's pay in the greatest adventure of our age."

Operative in this kind of work for some eight years, International Voluntary Service is managed by a 15-man board of directors whose joint overseas experience approaches an aggregate of nearly two centuries. Executive director for IVS is Dr. John S. Noffsinger, who offers this opinion: "In the past IVS has screened adaptability and emotional qualities carefully in all applicants. Because we feel we can take only the very best, we accept only about one out of every ten applicants. The thing I fear most is that on a national level the program will become political, and the country will end up sending everybody and his brother out to do this kind of work."

THE objectives of the Peace Corps are perhaps the best reasons for the program to be carefully run. As outlined by the Colorado State University study which serves as a foundation for the formation of the Corps, the objectives are these: (1) Accelerating the process of economic and social development in the less developed areas of the world; (2) fostering a mutual understanding and appreciation of the culture, motivations, attitudes and problems of the United States and the countries in which the Corps will work; (3) enlarging the reservoir of American citizens who have a personal knowledge of other areas of the world; (4) creating a carefully selected pool of talented young citizens for further public and private service abroad; and (5) creating an opportunity for personal fulfillment for participants in applying their ideal of democracy, of the brotherhood of man, and of the dignity of labor in a program which stresses personal contact with people in the developing countries. With this in mind it is well worth quoting the last two sentences in the report:


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The potential of the Peace Corps is practically without limit, but this potential can be realized only if the right people get the right training and are allowed to do the right kind of a job in the countries to which they will go. That the first members should be recruited —and perhaps be overseas—by the end of this year only underlines the urgency of these needs being met. It is the responsibility of the professions which will supply the people for the job to be sure that the raw material is available to make the Peace Corps as it has every right to be.—**End**

## SPECIAL REPORT

*(Continued from page 37)*

ficer, election commissioner, and police commissioner.

As in the 1953 survey there was little feeling among the Missouri group against taking the survey. In the instructions accompanying the survey sheet it was made very clear that no person was being asked to cooperate against his personal wish. It was carefully pointed out that each individual return would be held in strict confidence and that only the totals had any pertinent value or would be made public.

The engineering profession needs, and should have, the active support of each of its members toward the promotion of meaningful public relations for the professional engineer. This requires time, effort, initiative and a crusading spirit. Obviously, it is both wrong and foolish for any professional engineer to believe he can successfully live by concentrating the major part of his time and creativeness on civic work and by slighting his livelihood without ending his career in disaster.

There is a happy medium for professional engineers to maintain. This Missouri study will help to find it. It includes making a living and at the same time shouldering a fair share of community responsibility. The good engineer finds this place and pursues it consistently during his lifetime.—**End.**

## LAW

*(Continued from page 29)*

patent practice, although there would still be some degree of the nonlawyer problem posed in the Battelle case if the equivalency provision is retained. There would also remain the nonlawyer practice problem of those admitted as patent agents before adoption of the new rule, who would not be affected by it. The disposition of the Advisory Committee recommendation is uncertain in view of the change in Administration.

## BER CASE

*(Continued from page 33)*

cal meetings. It is particularly important to note the emphasis on the recruiter sticking to facts and not exaggerating the virtues of his company, and the avoidance of special payments, gifts or other inducements. Likewise, the ASEE statement imposes obligations on the recruitee to weigh carefully his interests, abilities, career objectives and methods of achieving them. And it should be added that the second portion of the NSPE Professional Policy calls attention to the obligation of the engineer to his present employer in contemplating a change of employment.

With regard to questions 2 and 3, it is clear that the Canons and Rules cited indicated that the engineer is expected to place no impediments in the way of an engineer employee who might desire to advance his career through a change of employment. In fact, Section 22 of the Canons, and Rule 39 suggest an affirmative duty to give fellow engineers the fullest opportunity for professional and technical advancement.

The NSPE Professional Policy on Freedom of Employment supports this interpretation in opposing limitations in contracts or conditions of employment with reference to change of employment. There is nothing in the Canons, Rules or Professional Policy statement to limit the choice of different employment in terms of a "competitor," and it therefore must be assumed that an affirmative answer would apply to questions 2 and 3.

*(Continued on next page)*

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**Conclusions:**

Q. 1 & 4—The Canons of Ethics and Rules of Professional Conduct are not applicable to companies, except as their actions are determined by individual professional engineers. There is an ethical duty on the engineers in policy-making positions in a company to use their influence to encourage attendance and participation of engineers at industrial exhibitions and meetings of professional and technical societies.

Q. 2 & 3—It is ethically proper for an engineer to discuss employment with another company, regardless of whether the companies are competitors, and to take such employment if in his professional interest. However, the engineer in considering such a change of employment should carefully weigh his duty of responsibility and loyalty to the current employer and the possibility of accomplishing his professional advancement through the present employer.

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## LETTERS

*(Continued from page 4)*

obvious that these ads are being paid for with the taxpayers money to give publicity to the activities of the firms concerned. If these firms really are anxious to obtain the services of qualified engineers, they should use American Engineer to announce this.

Carsten F. Boe, P.E.,
Deep River, Conn.

### Using Titles . . .

Dear Editor:

I just finished reading the interesting article "Where Does Science Stop and Engineering Begin? by John R. Ragazzini, dean, College of Engineering, New York University, which appeared in the February issue of American Engineer.

The article was a very comprehensive explanation of the difference between the engineer and the scientist. The general public should be given the opportunity to read Dr. Ragazzini's article so that they will become well acquainted with the difference. From

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my experience internationally most countries are well aware of the difference between the engineer and scientist which accounts for the fact that the engineer is highly respected throughout the world—much more than in the United States. It occurs to me that if the American public were made to understand exactly what the engineer represents in our scheme of things we might eventually receive the recognition due the profession.

As an example of how we downgrade the profession, the article refers to the author as John R. Ragazzini, and under his photograph he is listed as Mr. Ragazzini. The designation "Mr." to a Ph.D. in engineering would never be used anywhere in the world except in the United States. The article should have indicated that Dean Ragazzini is Dr. Ragazzini and not Mr. Ragazzini. Unless we get over the ridiculous idea of downgrading the profession, we will never receive the recognition and respect due Dr. Ragazzini by the general public. Let's get our house in order before we ask the public to recognize the importance of the engineering profession!

I think that Dr. Ragazzini's article should be published in magazines such as the *Readers Digest* or a similar publication so that the American public will be enlightened by it. It is the finest description of the difference between the engineer and the scientist that I have ever read and the article is written in a manner that the general public should understand.

I hope you will accept my suggestions in the spirit intended.

JERRY G. RIZZO, P.E.,
New York City

### Demand for Engineers . . .

Dear Editor:

The February issue of the AMERICAN ENGINEER carries articles which repeat the familiar cry of a shortage of engineers, with the familiar lack of sound reasons.

A book, which is rarely cited, has appeared on this subject. It is "The Demand and Supply of Scientific Personnel" by Blank and Stigler, published by the National Bureau of Economic Research, New York, 1958. Its conclusion is that on an *economic*

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basis, no evidence could be found of a shortage. Over the preceding ten-year period, for example, engineering and scientific salaries rose relatively more slowly than the average income for all occupations.

It is to the interest of the business man to claim a shortage in those occupations which he employs. He may get a better supply, in time. It is to the interest of the educator, too. His school may grow. It is also to the interest of the government, since it may reduce engineering labor costs on defense contracts. With all these pressures, spokesmen for all parties may be tempted to speak out in their own interests, which may have no relation to the interests of engineers or, for that matter, to the facts. Or, alternatively, claims of shortages may be simply repetitions of earlier statements of others, grown easy through long use.

In my experience, a successful commercial company (as contrasted with a government contractor) which competes in a highly technical field does not hire even one in ten of the graduate engineers who apply. It hires only the very best qualified for the vacancies on hand, and ability, not salary, is normally the first consideration. Some of the most successful companies in technical areas rarely, if ever, advertise for engineers. The clamor, indeed, seems to vary inversely with the success and reputation of the organization.

Mr. Robbins' "A" high school student (AE, February, p. 48) worked summers for a company where he observed the engineers to be doing relatively dull, routine work. It is too bad that his experience was not broader. However, the fault was probably about equally that of the company and the engineers themselves, who may well have been dull people. The clever ones would leave when they could, of course, leaving the less clever behind. The student did nevertheless see a routine organization doing routine engineering work. They are not uncommon.

The claims of shortages, I believe are found mainly among large government contractors, and among other smaller organizations in which for various reasons it is less desirable to work. Some practices and conditions which have made various organizations unpopular among engineers are these: (1) Poor physical working quarters, such as windowless, ill ventilated offices or huge, distracting bullpens with acres of desks; (2) petty and harassing restrictions on methods of performing engineering work, such as forced dependence on pools of indifferent technicians; (3) unduly restrictive invention and secrecy agreements, coupled with policies against patenting or publication of engineering results; (4) unethical or illegal instructions, such as for rigged time charges against certain contracts, misleading reports, and doctored test data; (5) incompetent or jealous supervisors.

I do not think such practices are common, but they are often told in private conversations. The contrast with common published material on engineering shortages and advantages is such as to cast doubt on all of the latter, in the minds of many. One good repetition of the story about the originator of an important new product who got fired for his pains, will undo the effect of several "shortage" articles.

If we are willing to discuss the bad as well as the good aspects of engineering employment, we will show an attitude that can attract able young people into engineering. But if we restrict public discussion to pious pronouncements and platitudes we will fail to convince, and moreover will do nothing to help improve conditions in that minority of organizations which need improvement.

L. Fleming, P.E.
Pasadena, Calif.

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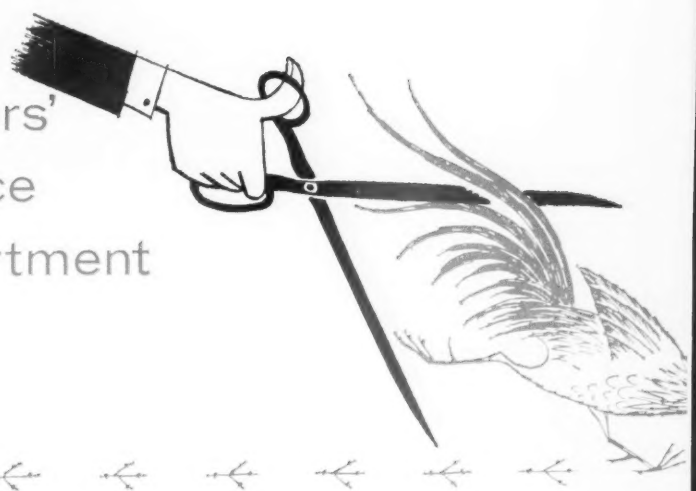

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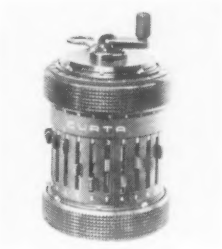
# Progress in Products

## VOLUMEASURE — Item 30

Soiltest, Inc. has developed a rubber balloon method for testing soil densities. The Volumeasure consists of a calibrated glass cylinder, guard, actuator bulb, rubber balloon and base plate. Liquid contained in the glass cylinder is pumped into the balloon which expands to fill the hole from which a test sample has been removed. Density measurement is shown as the difference between readings of liquid and final levels.

## CALCULATOR — Item 31



A new lightweight calculating machine has been introduced by the Curta Company for designers, engineers and technicians who require a precise on-the-spot answer for all types of mathematical operations. The Curta has a capacity of eleven digits on the keyboard, eight on the indicator dial and 15 in the answer dial. Made of stainless steel and anodized aluminum alloys, the Curta is only 2 1/16" in diameter, 3 3/8" high.

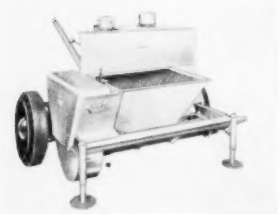
## ANGLE DRIVES — Item 32

F.W. Stewart Corp. announces two new angle drives. The T-Drive and the Right Angle Drive have ¼" diameter shafts cut to a 1/16" flat to provide a stronger attachment for coupling ends. Constructed of aluminum alloy housing, steel gears, and made to utilize oilite bearings, the drives are primarily used with flexible shafting but provide for a wider variety of uses than those used only in conjunction with flexible shafting. They have an ultimate static torque capacity of 25 lb. inches with a backlash of six degrees.

## NOMOGRAPH — Item 33

A nomograph for computing approximate costs of building atomic-hardened structures, may be obtained free of charge from Burns and Roe, Inc. The four-color chart and supporting data were derived empirically from records of actual installations. With the nomograph architectural and structural engineers may estimate rough costs for three major types of buildings: rectangular, arch, and dome. Length of span for each type structure, and design overpressures are variable parameters that are used to determine costs graphically.

## UNI-CRETOR — Item 34



A new all-purpose concrete placing machine, the UNI-CRETOR, was announced recently by Airplaco. The unit is described by the manufacturer as a high production pneumatic concrete placing machine, capable of performing four major job operations. Wet gunning is accomplished by pumping premixed concrete through flexible rubber hose to a nozzle.

## SAFETY FLASH VEST — Item 35

The Safety Flash Vest is made of a vinyl coated heavy cotton base in a vivid fluorescent orange-red with contrasting wide luminescent white stripes. Designed to fit over any type of clothing, it is perforated for coolness and comfort. Secured by heavy cloth tapes through elastic cloth loops, complete freedom of movement is assured. Plainly visible at distances either day or night and contrast is obtained even on sunless days.

## HEATING PROCESS — Item 36

Dean Products, Inc., has developed a unitized heating container known as the Steempan for warming, cooking, drying, or evaporating of chemicals, pharmaceuticals, food products and other industrial process materials in laboratory, pilot plant or production. The Steempan eliminates the need for pipe coils, tubing coils or jacketing. Readily adaptable for installation on a stand, table or in an enclosed chamber, it is made of 16-gage, embossed sheet, electric resistance welded to a 14-gage companion backsheet stainless steel. Other metals may be specified. Straight sides may have a flanged top. Available in standard sizes.

## SCALE INDICATOR — Item 37

A new torque wrench scale indicator is using the unique properties of Du Pont's "Delrin" acetal resin to reduce the margin of error in test procedures while cutting time by nearly a third. One of the first continuous spring applications of its type in a plastic the "memory fingers" are featured on a line of torque wrenches manufactured by P.A. Sturtevant Co. The device is used to obtain peak readings on compression, tension and torsion load in tests as well as to facilitate tightening fasteners to torque specifications. Accuracy is rated at better than 99.95 per cent on the average size wrench.

**This feature describes new products of general interest to professional engineers. For further information, circle the item number in the Readers' Service Dept. and mail to AMERICAN ENGINEER.**

*These listings are informational and are not an endorsement of the products, nor of the manufacturer's claims.*

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